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ANALYSIS OF THE MARINE CORPS SUPPLY MANAGEMENT UNIT'S INTERNAL OPERATIONS AND EFFECT ON THE WARFIGHTER

December 2016

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INTERNAL OPERATIONS AND EFFECT ON THE WARFIGHTER**

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LIST OF ACRONYMS AND ABBREVIATIONS

ACE	Air Command Element
AOR	Area of Responsibility
APSR	Accountable Property Systems of Record
CE	Command Element
CIC	Carousel Interface Controllers
CLNC	Camp Lejeune, North Carolina
CPEN	Camp Pendleton, California
CPI	Continuous Process Improvement
CSSE	Combat Service Support Element
DASF	Due and Status File
DFAR	Defense Federal Acquisition Regulations
DOD	Department of Defense
DON	Department of the Navy
DMAIC	Define, Measure, Analyze, Improve, and Control
FAR	Federal Acquisition Regulations
FMF	Fleet Marine Force
GCE	Ground Combat Element
GME	Garrison Mobile Equipment
ISSA	Inter Service Support Agreement
KO	Contracting Officer
LCE	Logistics Command Element
LOGCOM	Logistics Command
MAGTF	Marine Air-Ground Task Force
MARADMIN	Marine Administrative Message
MARCORLOGCOM	Marine Corps Logistics Command
MCAS	Marine Corps Air Station
MCAGCC	Marine Corps Air Ground Combat Center
MCB	Marine Corps Base
MCIEAST	Marine Corps Installation East
MCSS	Marine Corps Supply System

MCCSSS	Marine Corps Combat Service Support Schools
MCRD	Marine Corps Recruit Depot
MCWP	Marine Corps Warfighting Publication
MCO	Marine Corps Order
MEF	Marine Expeditionary Force
MEU	Marine Expeditionary Unit
MLG	Marine Logistics Group
MMDC	MAGTF Materiel Distribution Center
MWTC	Mountain Warfare Training Center
NAICS	North American Industry Classification System
OCONUS	Outside the Continental United States
OIC	Officer in Charge
OPSO	Operations Officer
OPT	Operational Planning Team
PP&P (P3)	Preservation, Packaging, & Packing
SMU	Supply Management Unit
SNCOIC	Staff Noncommissioned Officer in Charge
SOP	Standard Operating Procedure
SPN	Supply Procedure Notice
SWRFT	Southwest Regional Fleet Transportation
USMC	United States Marine Corps
VOC	Voice of the Customer
WEBSTRATIS	Storage Retrieval Automated Tracking Integrated System

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I. INTRODUCTION

One of the primary concerns of Marine Air Ground Task Force (MAGTF) commanders is the sustainability of their forces in order to accomplish the mission. Logistically speaking, each MAGTF must plan for and requisition supplies, equipment, and repair parts in a timely manner in order to sustain operations. The United States Marine Corps (USMC) currently utilizes a two-level system of supply in order to allow MAGTF commanders to requisition materiel and supplies for their specified equipment sets and personnel allocations that have been tailored to accomplish a wide array of mission requirements in the modern spectrum of conflict.

A. PROBLEM STATEMENT

There are differing approaches to how the Supply Management Unit (SMU) manages its internal supply chain operations, and these have a direct impact on the warfighter. This effect can be measured by increased maintenance-cycle time for the warfighter's respective equipment sets resulting in lower maintenance readiness rates than necessary. However, it is hard for supply chain managers to isolate the root causes due to the resources available and processes implemented at each SMU. One example is the delivery of maintenance parts that can be managed internally or externally; both of these approaches can potentially lead to increased efficiencies or burdens on the supply chain. This project addresses whether the current Marine Corps SMU internal operations have a positive or negative effect on the warfighter.

B. PROBLEM BACKGROUND

The primary mission of the Marine Corps' SMU is to act as the intermediate supply activity by providing the requisitioning support between the wholesale and consumer levels of supply within the established Marine Corps Supply System (MCSS). The SMU stockpiles supplies close to the customer, also known as the warfighter, in order to decrease requisitioning cycle time and, in essence, has become a natural bottleneck between the wholesale and consumer levels of supply. The speed at which the

SMU can effectively fulfill and ship a requisition has a direct impact on the supply and maintenance readiness levels of its supported units.

This project centers on determining and analyzing the internal processes of the SMU's requisition procedures and its distribution capabilities in order to identify potential areas of improvement. The objectives of this project include an analysis of current SMU requisitioning procedures and protocols, the Marine Corps' continuous process improvement (CPI) program, and the incentives within selected logistics contracts supporting SMU operations.

C. PURPOSE

This project lays out the approach that the USMC takes in regard to garrison-based supply and logistics operations. The intent of this project is to capture and highlight the differing approaches to managing the supply chain operations of the SMU. The primary question of this project is: How do the current SMU internal operations affect the warfighter—positively or negatively?

The following subsidiary questions help to further refine the purpose of this project and focus the research efforts:

1. What are the supply instructions, other supply doctrine, and literature associated with the SMU?
2. What specific continuous process performance data are present, and how mature are the current programs?
3. What effects do current SMU operations contracts have on the supply chain?
4. What does the analysis of the data indicate?
5. What conclusions and recommendations can be made based on this project's analysis?

D. PROJECT SCOPE

The Marine Corps utilizes three supply activities, known as SMUs that operate at the intermediate level of supply in order to deliver supply support to warfighters at the consumer-level of supply. The primary locations used in this study were the West and East Coast SMUs located at Marine Corps Base (MCB) Camp Pendleton (CPEN) in California and MCB Camp Lejeune (CLNC) in North Carolina, respectively. This study excludes the third SMU located at MCB Camp Butler in Okinawa, Japan, due to the study's travel budget and time constraints. This project selects three aspects of the supply chain in order to analyze and assess the internal processes and procedures of the SMU and their effects on the warfighter. These areas fall under the categories of organizational standard operating procedures (SOPs), the Marine Corps CPI program, and selected logistical contracts in support of SMU operations.

E. METHODOLOGY

The information gathered for this report came through emails, conference calls, and two off-site visits at MCB CPEN and CLNC. The individuals providing the requisite details included the CPEN SMU Process Reform officer in charge (OIC), CPEN MAGTF Materiel Distribution Center (MMDC) OIC, the CPEN MMDC operations officer (OPSO), the CPEN Regional Contracting Office (RCO) deputy contracting officer (KO), the CLNC SMU OIC, the CLNC RCO deputy contracting officer, and the CLNC SMU OPSO. The data, details, and perspectives gained lent themselves to a side-by-side comparison of the two SMUs given the following limitations: different operational constraints, distinct organizational structures, and unique geographic locations. However, this project was not a direct comparison. The data allowed for identification of variations in practices, and the analysis of these variations offered actionable recommendations for stakeholders. This project evaluated an SMU SOP, four Supply Procedures Notices (SPNs), eight years of CPEN CPI records, and three separate contracts associated with SMU distribution support.

F. CHAPTER SUMMARY

This chapter provided an overview of the purpose, scope, and methodology of this project by providing the background on how the Marine Corps conducts garrison-based supply and logistics operations. Four chapters follow this introductory chapter. Chapter II is the literature review and includes background that describes the previous research relevant to this topic, it also provides insight into the body of work and tools that are used in the analysis. Chapter III details the information acquired during the data collection period for the project. Chapter IV breaks down the data into three areas of focus that are then analyzed against military doctrine and academic literature. Chapter V provides the conclusions and recommendations based on the findings for this project.

II. LITERATURE REVIEW AND BACKGROUND

This chapter provides the literature review and background. The purpose of this literature review is to highlight the body of knowledge unique to the military supply chain, SMU, and contracting in the Marine Corps. It begins with an overview of the MCSS and then narrows down to SMU operations. Next is a background on CPI and its use within the Marine Corps. Finally, this chapter concludes with an overview of contracting in the Department of Defense (DOD).

A. LITERATURE REVIEW

The DOD is currently operating in a constrained fiscal environment. Our goal of this project is to add to the existing body of knowledge by completing recommended research from previous authors and providing pragmatic solutions that can be implemented at the lowest level. Our intent is that our recommendations will be implementable with few changes to policy and will require minimal additional resources to manage. Supply chain leaders are staffed and must continue to exhibit expert resource management decisions on a daily basis. This creates a dilemma when considering the implementation of new practices without understanding the gains associated with them. This project intends to highlight current situations and provide simple, noninvasive solutions that can be implemented at the lowest levels of support.

As the overseas war effort continues to shift back to political instruments other than military, so does funding for these operations. This shift has created a constrained fiscal environment for the DOD. The DOD prioritization of limited funding still favors military operations over logistical improvements to the supply chain. Implementing major technological improvements and infrastructure upgrades to increase efficiencies within the supply chain is worth pursuing in the long term but does not have an immediate impact on day-to-day operations. In the short term, supply chain leaders continue to face challenges such as personnel staffing shortfalls and must continue to make effective resource management decisions on a daily basis to maintain short-term goals.

Through the framing and research phase of this project, an exhaustive search from 1998 to the current fiscal year was conducted on supply chain management of the Navy and Marine Corps. These methodologies were applied to increasing efficiencies at the SMU and to Marine Corps contracted support at the lowest levels in the supply chain. The relevant contributions of these reports on our subject matter were captured and incorporated into the overall goal of how this project will contribute to the Marine Corps SMU body of knowledge.

Kundra, Brown, and Donaldson (2014) focused on two communities within the Navy supply chain, Naval Special Warfare Command and Explosive Ordnance Detachment Command, and detailed the advantages and disadvantages of each and their different resource streams. Their recommendations focused on increased accountability of paperwork, improved IT structures, and the use of Lean Six Sigma in the supply chain process. The recommendation of using Lean Six Sigma practices is common among reports looking at ways to gain efficiencies within the supply chain (Kundra et al., 2014).

Fitzgerald (1998) highlighted the methodologies of “just in time” versus “just in case” inventory review. His research proposed that there was a need to determine the optimal methods of coordinating logistical support to the Marine Expeditionary Units (MEUs) deployed from MCB CPEN. He focused on assessing the effectiveness of the MEUs’ supporting units and conducted an analysis of advancements in In-Transit Visibility (ITV) and its effects on the MEUs. These two areas of focus evaluated protocols and platforms. He recommended better protocols to collect data for future analysis, technological innovation, and restructuring staffing and funding procedures.

Similar to Kundra et al. (2014), Strand (2015) centered on the Marine Corps’ forward deployed supply chain management for expeditionary logistics. He used a fictitious case study to stress the complexities of an expeditionary environment. His report highlighted top-level logistical issues that occur frequently in a deployed environment. His conclusions focused on implementing updated doctrine and reference guides, and minimizing wasteful logistics practices.

Multiple reports that were reviewed focused primarily on the SMU. Bacon, Hunter, and Reyna (2007) focused on developing “a consumable inventory management strategy for the SMU that is applicable to other DOD supply support organizations” (p. v). This approach utilizes current business modeling methodologies to improve the Marine Corps’ days of supply and stock-out probability models. The report stressed the difficulty of implementing this new strategy into the DOD’s culture and budget processes. Evidence of this is stated in the conclusion: “Therefore, DOD needs to revamp its existing budget policies to offer incentives for improving readiness and reducing operational expenses” (Bacon et al., 2007, p. 77). Lean Six Sigma approaches were also mentioned as best practices to implement to gain efficiencies at the SMU.

Thorn and Hubbard (2012) showed how simulation modeling can be used to forecast customer wait time. They noted that their research was limited in application due to the scope of only one Principle End Item (PEI) from one geographical region with theoretical parameters in place to collect data. They also stressed that they were limited by the data inputted into the SMU database; if this data was inaccurate, the results may have been as well. With any relational model, it is hard to capture the effect of all possible variables on the problem. In their recommendations, they proposed a follow-on study to improve the maintenance process itself by focusing on lean initiatives, improving personnel management, and personnel training.

The thesis by Dinwoodie and Herold (2011) is one of the only works involving contracting in the Marine Corps. The authors evaluated the DOD outsourcing policy and conducted an analysis on the Consolidated Issue Facility. This facility is responsible for issuing all individual equipment to a geographic area. This research was the first independent study on the cost and effectiveness of this program.

The goal of this project is to highlight the effects of these areas of interest on the supply chain as a whole, while keeping in mind the required resources to implement noted recommendations. To complete this goal, the team analyzed existing supply chain protocols and CPI initiatives already in place, while evaluating existing contracts that support SMU operations.

B. BACKGROUND

After a decade of sustained operations in two different conflicts in Afghanistan and Iraq, the DOD's primary focus was on forward deployed logistics operations. These operations were geared toward mission accomplishment as the metric. The subsequent drawdown of these operations has allowed the DOD to refocus on core logistics competencies. The following paragraphs speak to the refinement of SMU SOPs, the increasing focus on CPI, and the increased reliance on more government contracting.

1. Marine Corps Supply Doctrine

Supply is a sub function of tactical logistics and can be best described as “the cyclic process of ordering and issuing materiel to supported units” (Department of the Navy [DON], 2000, p. 1–3). The team reviewed two Marine Corps Orders (MCOs), one Marine Corps User's Manual (UM), and two Marine Corps Warfighting Publications (MCWPs) to understand how the Marine Corps provides supply and logistics support to the Fleet Marine Force (FMF) in both garrison and deployed environments. All five documents describe the framework of the Marine Corps supply chain and the interworking's of each element in passing the requisitioned material to the warfighter,

a. Marine Corps Order Intermediate-Level Supply Management Policy Manual (MCO 4400.151) & Consumer Level Supply Policy (MCO 4400.150)

Currently, the Marine Corps has published two MCOs and one UM that provide guidance and protocols for its intermediate and consumer levels of supply. The MCO 4400.151, updated in 2012, governs the intermediate level of supply, that is, the location of the SMU, and establishes “supply policies necessary in the effective control of intermediate-level inventories for the Marine Corps” (DON, 2012, p. v). The MCO 4400.150, published in 2014, governs the consumer level of supply, which is the location of the warfighter (DON, 2014). This order provides guidance and policy for the standardized execution of supply operations throughout the enterprise in both garrison and deployed environments (DON, 2014, p. 4).

b. Marine Corps User's Manual Retail Supply & Maintenance Execution Procedures (UM 4000–125)

The UM 4000–125, as described by its title, is a user manual for the stakeholders with the MCSS. The manual acts a baseline for all supply and maintenance activities located within the supply system and allows for those in leadership and management positions to make decisions from a collective understanding of supply policy.

The UM 4000–125 is applicable to all ground retail supply and all field-level maintenance activities...This manual does not establish policy but promotes and supports it thereby making the contents directive in nature. [Due to] the recent nature of this publication, April of 2015, the intent of this manual is to update and publish procedures that supports current policy in regards to not only supply but also maintenance, maintenance management, and logistics chain management at the retail supply level and maintenance activities at all levels. (DON, 2015, p. 3)

c. Marine Corps Warfighting Publication MAGTF Supply Operations (MCWP 4–11.7)

The MCWP 4–11.7 can be viewed as a playbook for MAGTF commanders and their staff when planning for MAGTF supply operations. The publication is meant to inform the commander and staff in nature of supply in order to promote a better understanding for how the MCSS is designed to work in both the garrison and expeditionary environment.

The purpose of the Marine Corps Warfighting Publication (MCWP) 4–11.7, MAGTF Supply Operations, is to provide guidance governing the principles and concepts of supply and the organization, planning, and execution of supply support for a MAGTF in an expeditionary environment (afloat/ashore). The publication also provides essential information concerning supply sources and options available internally and externally to sustain the MAGTF during predeployment and deployment. (DON, 1998, p. 3)

d. *Marine Corps Warfighting Publication Tactical-Level Logistics (MCWP 4-11)*

The MCWP 4-11 is another tool in the MAGTF commander's toolbox that can be utilized in the planning process of MAGTF supply and logistics operations. This publication focuses upon the tactical level of war and as such is more directive in nature.

The purpose of Marine Corps Warfighting Publication (MCWP) 4-11, *Tactical-Level Logistics*, is to provide the doctrinal basis for the planning and execution of ground and aviation logistic support for Marine air-ground task force (MAGTF) operations at the tactical level of war. It establishes standard terms of reference for tactical logistics and combat service support operations and provides guidance for developing local Fleet Marine Force standing operating procedures. (DON, 2000, p. 3)

2. *The Marine Corps Supply System*

The Marine Corps currently operates by utilizing a tasked organized force called the MAGTF. "The MAGTF is comprised of four deployable elements: the Command Element (CE), Ground Combat Element (GCE), Aviation Combat Element (ACE), and Logistics Combat Element (LCE)" (Consolidated Public Affairs Office, 2012, p. 2). Whether in combat or in training, the MAGTF is designed to be self-sustaining and organized to meet the requirements of the combatant commander for its given area of responsibility (AOR). The responsibility of sustaining the MAGTF comes from the Combat Service Support Element (CSSE) that is located under the LCE for the MAGTF.

Within the CSSE is the MCSS that "provides the MAGTF commander with the necessary materiel for conducting combined arms operations. As a result, supply management and readiness must be emphasized at all levels of command to ensure an effective, responsive, and flexible supply program" (DON, 1998, p. 20). The primary mission of the MCSS is to "provide and manage those items necessary for the equipment, maintenance, and operation of the FMF and supporting establishments. When MAGTFs are deployed, the MCSS makes every attempt to forecast requirements so that necessary on-hand stocks are maintained" (DON, 1998, p. 20). "The MCSS consists of three managerial levels, Headquarters Marine Corps (HQMC), the in-stores, and the out-of-stores functional elements" (DON, 1998, p. 20). The HQMC level is responsible for the

performance of the entire supply system, whereas the in-stores level functions as an initial distribution point, and the out-of-store level acts as the management level for all items that have already been issued to its designated user. Both the HQMC level and in-stores managerial levels fall within the Wholesale Inventory level of supply with the out-of-stores level containing the Retail Inventory level of supply, which is further subdivided into the Intermediate and Consumer Inventory levels. The entire breakdown for the MCSS is shown in Figure 1. The primary focus of this project is the Intermediate Inventory level of supply for the Marine Corps.

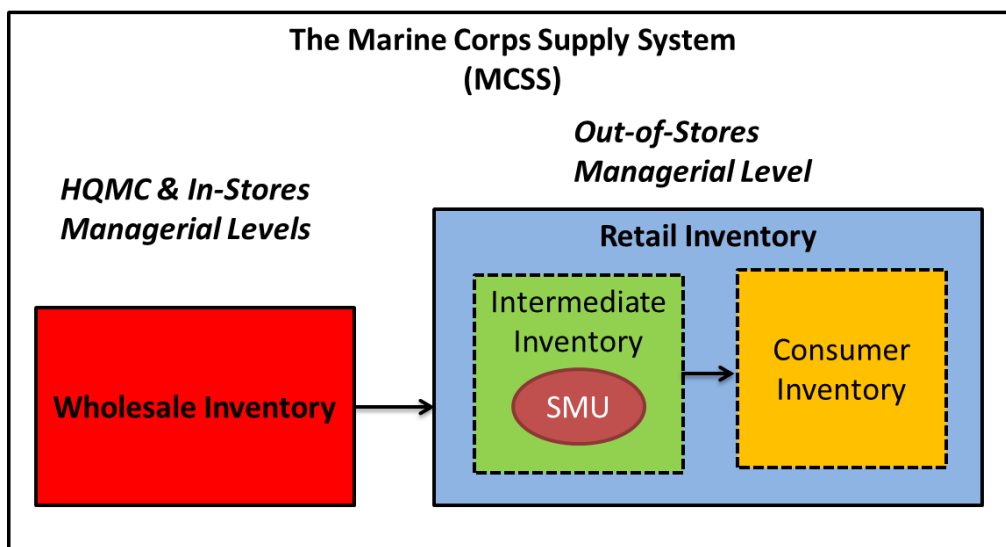


Figure 1. The Marine Corps Supply System. Adapted from DON (2014, p. 12).

a. The Wholesale Inventory Level

The Wholesale Inventory level functions at the national level with a management team that has asset knowledge and can utilize unrestricted asset control in order to support global inventory responsibilities. Currently, Marine Corps Logistics Command (MARCORLOGCOM) manages the wholesale inventory level and its control point (DON, 2014, p. 12).

b. The Retail Inventory Level

The next level down within the supply chain is the Retail Inventory level that is further subdivided into the Intermediate Inventory and Consumer Inventory levels. The Intermediate Inventory level of supply is a required agency between the Consumer and Wholesale levels as delineated by geographical location and tailored for specific organizations or activities. All Marine Corps SMUs are located within the Intermediate Inventory level of supply. The Consumer Inventory level of supply is limited in range and depth since it is the final element in the supply chain with the sole mission to provide internal sustainment to its supported unit(s) (DON, 2014). All Marine Corps Supply Sections are located at the Consumer Inventory level.

c. The Intermediate Inventory Level

The Intermediate Level of supply, by design, is a natural bottleneck between the numerous Consumer Inventory level activities within the Marine Corps and the national Wholesale Inventory level. The Marine Corps currently operates three separate locations delineated as intermediate levels of supply that support the three different Marine Expeditionary Forces (MEFs) across the globe. These Intermediate Inventory Levels are currently located in MCB Camp Pendleton, CA (CPEN), MCB Camp Lejeune, NC (CLNC), and MCB Camp Butler Okinawa, Japan, under the activities known as SMU, as shown in Figure 2.

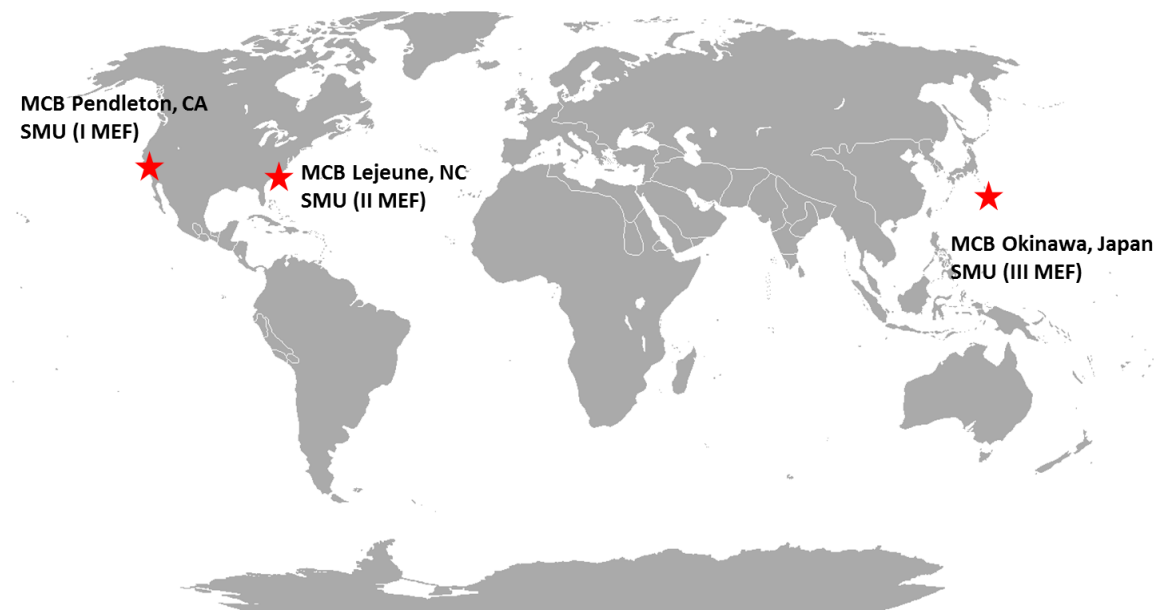


Figure 2. United States Marine Corps Supply Management Unit Global Locations.

d. The Consumer Inventory Level

The Consumer Inventory Level of supply is the final element of the Marine Corps supply chain. The inventory is limited in range and depth, and the purpose of the inventory is to provide internal consumption for that final element (DON, 2014, p. 12). These final elements may come in differing organizations and sizes, but typically the final element in the Marine Corps supply chain is a battalion-sized unit with the FMF.

e. The Marine Corps Supply Management Unit Overview

The SMU is the connecting file between the Wholesale Inventory and Consumer Inventory levels of the Marine Corps. Because the SMU is such an integral part of the Marine Corps supply chain, each SMU staff member is specially trained on a computerized accounting system that monitors the stock and materiel necessary to support the units that SMU is tasked to support. The management of these accounting inventories is done in-house at each SMU but is centrally controlled by HQMC:

They are mechanized in their accounting function, but they are not mobile as an entity and do not usually deploy with major troop units. ... The using units requisition materiel from the SMU's general accounts (i.e., the account which controls the inventory for the geographical region that the SMU supports), and their demand is either filled, back-ordered, or procured locally by open purchase contracts, through inter-service support agreements (ISSA), or passed to the integrated materiel manager. SMUs are the connecting link between unit level supply accounts. (DON, 1998, p. 22)

Being the natural bottleneck within the supply chain, the SMU must constantly work to improve its internal processes and external transportation support matrixes in order to sustain the operating forces within its geographical location. This mission is often hamstrung with decreasing staffing, funding, and organic resources, which forces SMU to contract certain capabilities to the DOD and non-DOD entities. In order to leverage its core competencies of supply management, the SMU must continually seek ways to balance its dwindling resources and funding with the usage of contracted support in order to meet the needs of its consumer level activities and the warfighter.

f. The Camp Lejeune and Camp Pendleton Supply Management Units

In this project, the team discusses only two of the three SMUs due to their geographical locations and similar capabilities/limitations. The CPEN and CLNC SMUs are both based within the Continental United States (CONUS) with each location residing on the West and East Coast of the United States, respectively, as shown in Figure 2. The CPEN SMU supports I MEF units, and the CLNC SMU supports II MEF units on a 24/7 basis. Although the internal workings and overall missions of the SMUs are similar, each unit takes different approaches to support its warfighters. Two notable differences in operation between the SMUs are the utilization of the South West Regional Fleet Transportation (SWRFT) and a Process Reform Section by the CPEN SMU that are discussed in detail later in this chapter.

(1) Overview of the Camp Lejeune Supply Management Unit

The CLNC SMU supports five major subordinate units across five different regional areas in North Carolina. These bases include MCB Camp Lejeune, MCB Stone Bay, Marine Corps Air Station (MCAS) Cherry Point, MCAS New River, and Marine Corps Combat Service Support Schools (MCCSSS) Camp Johnson. The CLNC SMU also supports MCAS Beaufort, located in South Carolina. Within these major subordinate units are units with varying maintenance part requirements for their differing demands. The automated priority system, known as the Accountable Property Systems of Record (APSR), ensures parts are reserved for units with a higher need.

The CLNC SMU utilizes both Marines and contracted personnel in order to fulfill its mission of supply support to its warfighters. The majority of its contracted personnel is located in the MAGTF Materiel Distribution Center (MMDC), Distribution Management Office (DMO), and the Preservation, Packaging, and Packing (PP&P) sections of its organization that are discussed later in this project. The CLNC SMU uses a mixture of organic and non-organic assets in order to fulfill the daily requisitions for maintenance parts from its warfighters. Marines within the CLNC SMU currently use forklifts, mule trains, and vehicles from 2d Transportation Support Battalion (TSB) aboard MCB CLNC to conduct internal distribution operations in support of II MEF. For distributions operations external to MCB CLNC, the SMU uses a mixture of contracted support through the MMDC and Marines and assets from 2d TSB to ship and receive cargo amongst the bases and locations external to MCB CLNC. A diagram of the CLNC SMU distribution structure is shown in Figure 3.

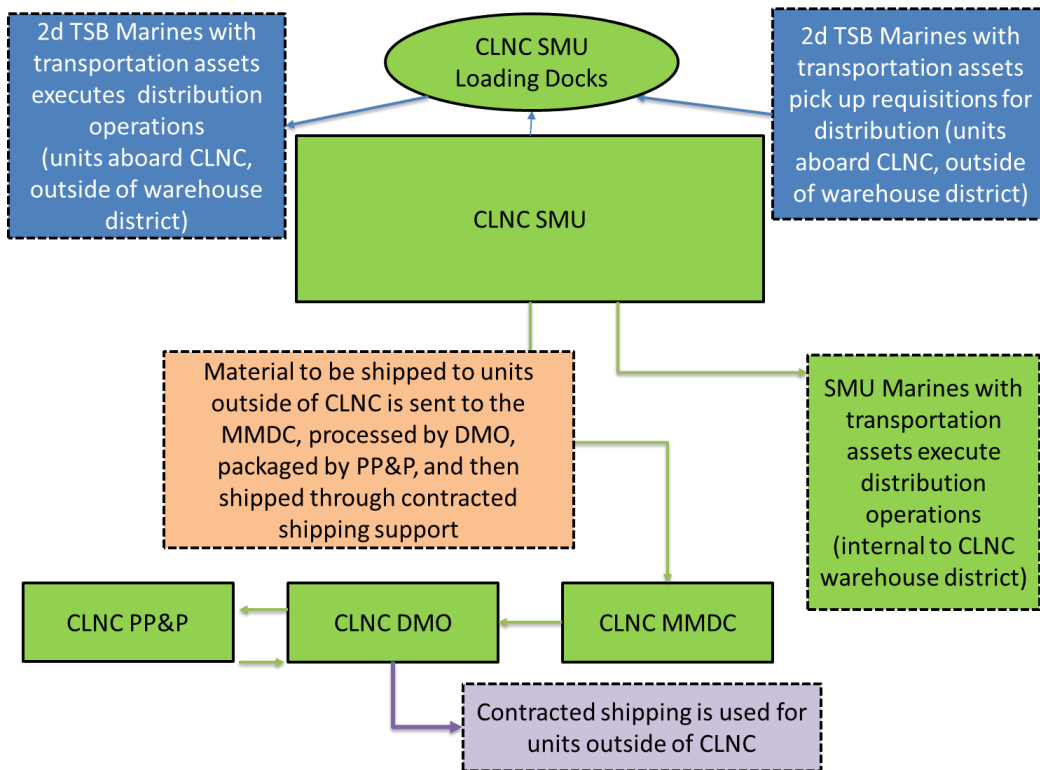


Figure 3. Camp Lejeune Supply Management Unit Distribution Diagram.

(2) Overview of the Camp Pendleton Supply Management Unit

The CPEN SMU supports five major subordinate units across five different regional areas in the southwest region of the United States. These bases include MCB Camp Pendleton, CA, MCAS Miramar, CA, Mountain Warfare Training Center (MWTC) in Bridgeport, CA, Marine Corps Air Ground Combat Center (MCAGCC) Twentynine Palms, CA, and MCAS Yuma, AZ. Similar to MCB CLNC, within these major subordinate units are units with varying maintenance part requirements for their differing table of equipment authorizations. The CPEN SMU uses the same automated priority system as the CLNC SMU. Both systems are on the same network, which makes it possible for USMC units to requisition parts from either SMU regardless of their geographical location.

The CPEN SMU differs from the CLNC SMU in how it packages and ships maintenance parts to its end users. Unlike MCB CLNC, which uses 2d TSB aboard

CLNC, the CPEN SMU uses the government-owned agency SWRFT to distribute parts to its warfighters. The CPEN SMU distribution diagram is shown in Figure 4.

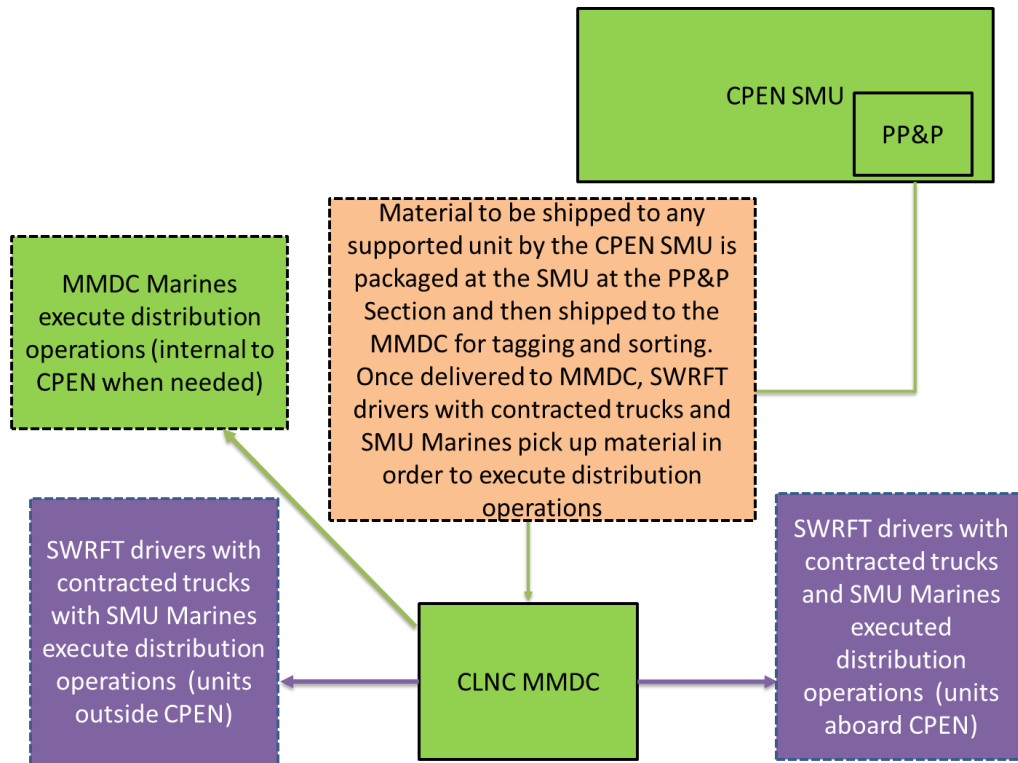


Figure 4. Camp Pendleton Supply Management Unit Distribution Diagram.

g. Organization of the Camp Pendleton Supply Management Unit

This section includes a brief discussion of the supply support duties of the following sections within the CPEN SMU: Customer Service, General Account, Storage, MMDC, PP&P, and the Process Reform Section. Both the CPEN and CLNC SMUs are tasked-organized in the following manner with the exception of The Process Reform Section, which is not currently active in the CLNC SMU. The organizational chart of the CPEN SMU is shown in Figure 5.

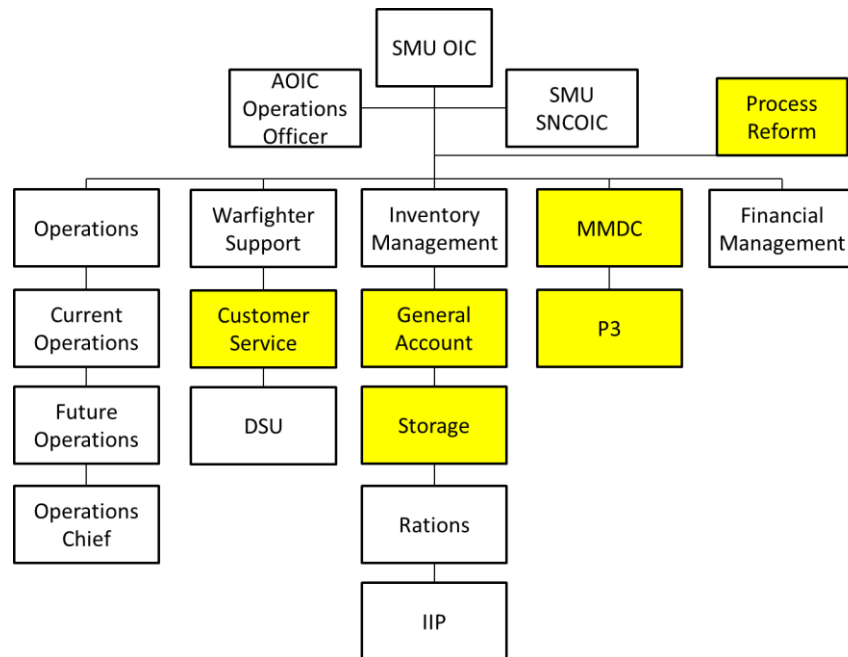


Figure 5. Camp Pendleton Supply Management Unit Organizational Chart.
Adapted from SMU (2015, p. 12).

(1) Customer Service Section

The primary task of the Customer Service Section is to assist its supported units by providing training and expertise in supply support operations. This training is executed on a daily basis of pulling and reconciling system-generated reports while fielding Requests for Assistance (RFAs) within a 48-hour period. Marines within the Customer Service Section strive to resolve 90% or better of RFAs within the allotted 48-hour window (SMU, 2015, p.74). Marines within this section also complete walk-through requests from supported units. Walk-throughs are a type of requisition that does not flow through the normal SMU supply chain. The requisition is intended to allow warfighters to pick up mission-critical supplies without having to wait for the Storage Section to pick and ship the items to them through the CPEN MMDC. The process for the how items are picked and shipped through the SMU supply chain is discussed in detail later in this chapter.

(2) General Account Section

The primary task of the General Account Section is to provide the SMU with the total operating management of stock and storage all of Class IX materials (repair parts and consumable items) within a 1% defect rate. This account handles stock control, daily reports, recoding of stockage items, executing SMU buys, the recording of the purchase data, executing Operational Code Change requests, handling Initial Issue Provisioning (IIP) Projects, reconciling the Due and Status File (DASF), executing special projects to include dispositions services, reservations, shipping confirmations, and analyzing Money Value Gained Lost (MVGL) reports (SMU, 2015, p. 23). The General Account Section manages the total inventory of the SMU in order to have the right kind and quantity of supplies for its supported units.

(3) Storage Section

The primary task of the Storage Section is to provide intermediate supply support to all MEF units. The Storage Section utilizes a warehouse management system called WEBSTRATIS that covers the functional areas of receiving, stock maintenance, gear issue, and gear packaging within a 1% or less discrepancy rate for all material processed. The daily workload of the Storage Section is to have all material processed within an eight-hour daily timeframe (SMU, 2015, p. 39). Marines within the Storage Section pick requisitioned maintenance parts and consumable items and move them to PP&P for shipment to the CPEN MMDC for their final movement to the warfighter.

(4) Preservation, Packaging, and Packing Section

The primary task of the Preservation, Packaging, and Packing (PP&P) Section is to provide an intermediate-level capacity of preservation, packaging, and packing support to the SMU. The responsibilities of the CPEN PP&P are centered upon the packaging of shipments and the priority designation it assigns to outbound cargo from the CPEN SMU. (SMU, 2015, p. 119). Marines within PP&P work in conjunction with Marines from the CPEN MMDC in order to package cargo to be shipped from the SMU to the MMDC where it will be later sorted and distributed by MMDC Marines and government employees from SWRFT for eventual delivery to the warfighter.

(5) Marine Air-Ground Task Force Material Distribution Center

The primary task of the CPEN MMDC is to perform distribution operations for the CPEN SMU. The CPEN MMDC is also responsible for the receiving of and the distribution of cargo aboard MCB CPEN by monitoring all inbound cargo received from the CPEN SMU. The CPEN MMDC aims to have a customer wait time within a 48-hour period and distribution discrepancies less than or equal to 0.5% (SMU, 2015, p. 113). Within the CPEN MMDC are Marines whose primary expertise is distribution operations with specialties that focus upon working on as tag teams and pallet riders. The CPEN MMDC employs the usage of tag teams in order to verify CPEN SMU manifests to ensure such shipping attributes as delivery address and weights are tagged on all outbound cargo. These attributes are associated with a Radio Frequency Identification Device (RFID) tag attached to the cargo with a Military Shipping Label (MSL). The RFID tag enables tracking of all inbound and outbound shipments from the CPEN SMU. Once cargo has been inspected and certified by Marines from PP&P, the cargo is loaded on a mule train and delivered to the CPEN MMDC Shipping and Receiving Building. Upon arrival, Marines inspect the cargo and offload it into its respective Routing Unit Code (RUC) lane (each unit the CPEN MMDC is tasked to support receives a RUC which enables for the accurate and efficient execution of ordering, shipping, tracking, and delivering of material). Marines then coordinate with government employees from SWRFT to request the quantity and type of transportation required to distribute cargo to the appropriate customer within the 48-hour delivery period. Once scheduled, SWRFT vehicles arrive and CPEN MMDC Marines are assigned as pallet riders to each SWRFT vehicle for that given day. These Marines ride with the cargo and ensure proper delivery and receipt of all cargo distributed from the CPEN MMDC, both physically and electronically. Although the CPEN MMDC falls under the control of the CPEN SMU, it has a separate SOP that governs its internal functions and its formal and informal contractual interactions with SWRFT. Both the SOP and the contractual interactions with SWRFT are discussed later in this chapter.

(6) The Process Reform Section

The primary task of The Process Reform Section is to review business practices and processes of the SMU supply chain in order to explore new strategies and potentially streamline internal and external SMU activities to promote efficiencies and optimize workflow (SMU, 2015, p. 159). The Process Reform Section analyzes supply chain activities on a daily basis and uses data collected to develop long-range plans for process improvement within for the SMU. This section has the authority to plan and execute Lean Six Sigma projects within the SMU with the objectives to achieve an 85% Overall SMU Conformity Rate during internal audits and maintain a 65% rate of SMU personnel trained on International Organization for Standardization (ISO) requirements (SMU, 2015, p. 159).

3. *The Continuous Process Improvement Program*

During the period of 2006 through 2016, various DOD-level, Navy-level, and USMC directives and orders were released to provide guidance for CPI implementation and resource management. Two lengthy guidebooks, *CPI Transformation Guidebook* (DOD, 2006) and the *USMC CPI Guidebook* (USMC, 2007), were released soon after the initial memorandums. The purpose of the guidebooks was to provide detailed instruction for the implementation, program structure, roles and responsibilities, and overall intent of the CPI implementation.

a. *Continuous Process Improvement Background*

The CPI background section covers two distinct areas to provide the reader with context. First, the team begins with a top-down chronological account of directives starting with the DOD and ending with the latest Marine Corps directive on the subject dated August 1, 2016. In order not to overload the reader, not every directive written in a 10-year period on this subject is mentioned. Then, the team further discusses the Continuous Process Improvement Guidebook, DOD CPI framework, and a DOD CPI progress assessment model.

In 2006, the Deputy Under Secretary of Defense (Logistics and Materiel Readiness) released a memorandum called *Establishment of DOD-Wide Continuous Process Improvement (CPI) Programs*. It was a detailed guide meant to act as a resource that provides standard language and best practices from industry and DOD CPI successes (England, 2006).

Also in 2006, the secretary of the Navy released a memorandum entitled *Transformation through Lean Six Sigma* (Winter, 2006). This memorandum acted as a warning order to the DON that it was time to standardize and implement Lean Six Sigma business processes. Up to this point in time, a combination of over 2,000 black and green belts had facilitated 2,800 projects that averaged a 4:1 return on investment (Winter, 2006).

The Marine Corps followed suit in December 2007 with the release of its own guidebook, *United States Marine Corps Continuous Process Improvement Guidebook*. The first page of the guidebook clearly laid out its purpose by stating, “The purpose of strategy, goals, and methods contained in this guidebook is to improve the combat readiness and warfighting capability of the Marine Corps—and the quality of life for our Marines, their families, and our Civilian-Marines” (USMC, 2007, p. 3). This guidebook is not policy, but provides the knowledge and how-to to answer one of the Marine Corps’ oldest mantras of “doing more with less.” This guidebook articulates industry best practices and tools to provide repeatable process improvement techniques. The standard practice used for all CPI projects is the Define, Measure, Analyze, Improve, and Control (DMAIC) project methodology, as shown in Figure 6. Each word signifies detailed steps and questions that must be answered and analyzed prior to moving to the next step. Each step requires appropriate levels of knowledge and resource support to be successful.

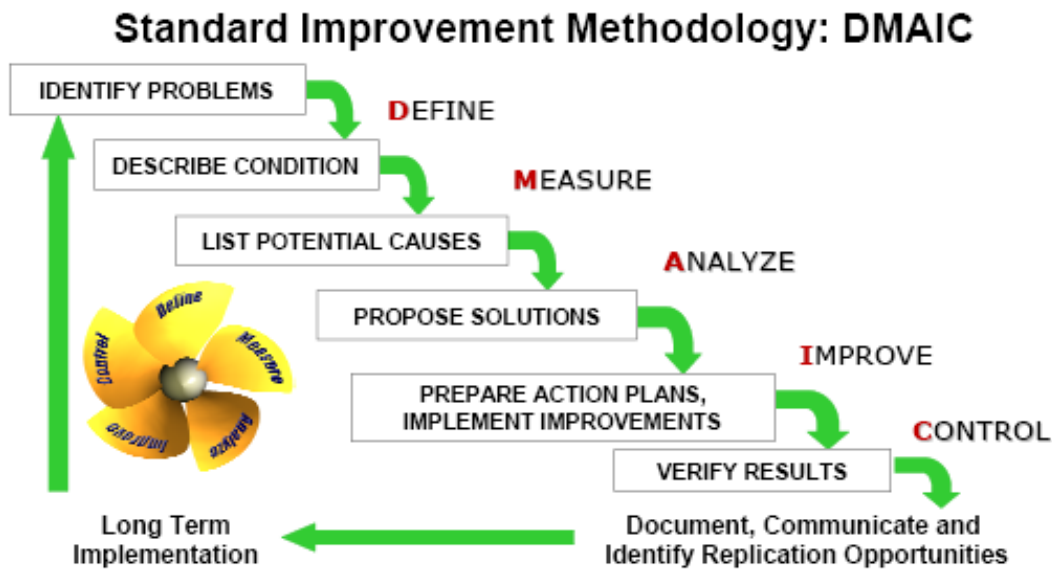


Figure 6. Define, Measure, Analyze, Improve, and Control Methodology.
Source: USMC (2007).

Up to this point in time, the previously published documents were higher level directives meant to shape the implementation at the service level. In January 2008, Marine Administrative Message (MARADMIN) 014/08, titled *USMC Continuous Process Improvement (CPI) Implementation Policy*, was the first of many directives to provide guidance and policy prior to an MCO being released. The guidance within this release defines key stakeholders, High Impact Core Value Streams (HICVS), training requirements, tasking, and IT support. One tasking to the deputy commandant for Installations and Logistics (DC, I&L) is to establish regional support to commanders with CPI black belts and master black belts in line with strategic objectives (USMC, 2008). This tasking allows commanders to request higher support for CPI implementation, training, and sustainment of project improvements.

In May 2009, the first Marine Corps Order (MCO) 5220.12 on CPI, entitled *Marine Corps Continuous Process Improvement*, was released (DON, 2009). This policy provides official guidance and tasking to USMC leadership on the implementation of CPI within all levels of command. The end state of this order is, “Marine organizations persistently apply organic CPI capability to continuously improve the effectiveness and efficiency of operations that support warfighting capability, combat readiness, and quality

of life for Marines and their families” (DON, 2009, p. 2). The order continues to define the CPI leadership and key tasks for those leaders. The HQMC CPI Program Office is tasked with providing training curriculum. There are three practitioner levels within the USMC that cover a range of experience and knowledge. The practitioner levels are as follows: CPI Level I is a green belt, Level II is a black belt, and Level III is a master black belt. Each subsequent level requires more knowledge and involvement in project implementation and completion. The order states, “The most important metric in CPI is to complete projects and produce results that matter” (DON, 2009, p. 3). These results are tied to cost, safety, and quality improvement of the initiating unit and the process manager.

In July 2009, DOD Instruction 5010.43, titled *Implementation and Management of the DOD-Wide Continuous Process Improvement/Lean Six Sigma (CPI/LSS) Program*, was released (DOD, 2009). The purpose of this document is to establish policy, delegate responsibilities, and provide guidance on the DOD-wide implementation of CPI/LSS initiatives. It discusses the roles of the top DOD officials responsible for implementing and monitoring CPI/LSS initiatives within the military (DOD, 2009). The DOD Instruction was released a little over three years after the publication of the Deputy Under Secretary of Defense’s original memorandum and guidebook. It is not a revised guidebook but serves to clarify previous guidance to top officials on their roles and expected actions to take in order to institutionalize CPI/LSS in the DOD. The DOD instruction provides an enclosure on the implementation plan. It states,

The implementation plan requires a top-down strategy consisting of four major points:

- (1) Increased communication of CPI objectives and promotion of CPI Culture.
- (2) Establishment and use of common CPI/LSS terms of reference and practices.
- (3) Increased collaboration across DOD Component organizations, minimizing duplication of effort and promoting full transparency of CPI/LSS activities across the DOD enterprise.

(4) Establishment of processes for communicating project information and promotion of sharing of project opportunities and results across all DOD functional areas to achieve exponential benefits and return on investment. (DOD, 2009, p. 7)

The plan further directs each DOD component to establish program resources to

- (1) Act as a cadre of focal points that are knowledgeable of CPI/LSS principles and methodology.
- (2) Execute effective CPI/LSS program implementation and long term successes based on fact-based decisions.
- (3) Provide organizational CPI/LSS education and training and facilitate CPI/LSS project management.
- (4) Provide strong and continuously visible leadership throughout all levels of the organization to promote a CPI/LSS culture of innovation and teamwork. (DOD, 2009, p. 7)

Building on the directives of 2009, a base-wide policy letter entitled *Continuous Process Improvement Program* was released by the commanding general of Marine Corps Installations East (MCIEAST)-Marine Corps Base Camp Lejeune (USMC, 2012). It cites as references the MCO 5220.12, USMC CPI Program Guidebook of 2007, and a previous CG MCIEAST policy letter of 2009. This directive is an example of policy from a commander to the lowest functional units in the USMC. This policy letter tasks installation commanders to provide points of contact of their existing CPI programs to higher headquarters. Installation commanders are also expected to create and implement programs if none exist, ensure senior leaders are trained, communicate project status with higher headquarters, and share project successes with adjacent units (USMC, 2012).

To explain the lack of directives from 2009 through 2016, the reader must understand the events occurring during that period. The military was involved in the wars in Iraq and Afghanistan, executed a surge, and planned a draw-down of troops that overshadowed initiatives such as CPI/LSS implementation and sustainment.

In August 2016, MCO 5220.13, *Enterprise Performance Improvement Strategic Prioritization Process*, canceled MCO 5220.12 (DON, 2016). This order shifts the implementation and resource management of CPI to the strategic level. This order

effectively shifts the resource pool used to train new practitioners to instead focus on enterprise-level initiatives agreed upon by top senior leadership. This new vision of CPI implementation was a notable shift from the policy in 2009, which focused on growing a culture of CPI within the USMC. The order's end state is "a climate of efficiency and effectiveness achieved through the application of proven standard methods for identifying opportunities and streamlining processes to build the best Marine Corps the nation can afford in an increasingly austere fiscal environment" (DON, 2016, p. 2). Identified initiatives must now be vetted up the chain to the HQMC level. According to the order, enterprise-level projects must be

1. Of strategic impact to the USMC enterprise
2. Driven by mission/strategic guidance
3. Valuable to resolve
4. Problems that "have stood the test of time"
5. Without known solutions (DON, 2016, p. 3)

b. The Continuous Process Improvement Transformational Guidebook

Even though current USMC policy has shifted CPI attention to a strategic level, there are still CPI practitioners at all levels of the Marine Corps. For this reason, and because CPI/LSS can be used within any organization to realize efficiencies and effectiveness of processes, it is still worthwhile to discuss the *Continuous Process Improvement Transformation Guidebook* published in May 2006 by the Deputy Under Secretary of Defense (DOD, 2006). This guidebook provides the DOD with the CPI framework to be implemented, describes roles and responsibilities, and provides various references and tools to aid in implementation. The team focuses on the framework and a progress assessment tool used later in the report to assess a current CPI program.

CPI is a combination of proven schools of thought involving Lean, Six Sigma, and Theory of Constraints. Lean refers to the reduction of non-value-added steps in a process per the customer's perspective. Six Sigma deals with decreasing variation in a

process to increase efficiencies in the process. Theory of Constraints analysis continuously refines the process to reduce bottlenecks and decrease cycle time.

There are many metrics utilized within CPI, but the primary metrics DOD practitioners focus on are cycle time, reliability, and cost. Cycle time is a measurement of time from the warfighter requesting a product to the delivery of that product to the warfighter. Reliability is the assurance that the product delivered will function as promised the first time it is used. Cost is always a lingering consideration, and resource management must be used to ensure the most efficient service is provided to the warfighter at the lowest acceptable cost.

There are five core areas within the DOD framework that must be known in order for successful implementation of CPI to occur in an organization: concept foundation, deployment cycle, operational plan, change management, and metrics (DOD, 2006).

In order to implement repeatable, successful projects, organizations must include several foundational concepts. One of those concepts is attributes. Four foundational attributes are an established network of key leaders and practitioners who can work together across functional areas, outcome-focused projects that add value to the organization and its customers, use of the DMAIC process, and top-down leadership involvement and commitment to resource allocation (DOD, 2006). These attributes do not guarantee success but are required to ensure common relational and resource allocation roadblocks are removed prior to beginning a project.

Along with attributes are CPI principles that guide the decision-making, selection, and interaction involved in executing projects. There are seven core principles that stress the specific implementation of Lean, Six Sigma, and Theory of Constraints methodologies. They also focus on long-term improvements and a focus on value-added resources. The last two concepts are value stream focus and culture. Both of these last two concepts involve interaction across functional areas and throughout entire organizations to create a focused effort within a competing interest environment.

The deployment cycle for CPI shifts the focus from individual tasks and aligns efforts with value-added steps as perceived by the customer (see Figure 7).

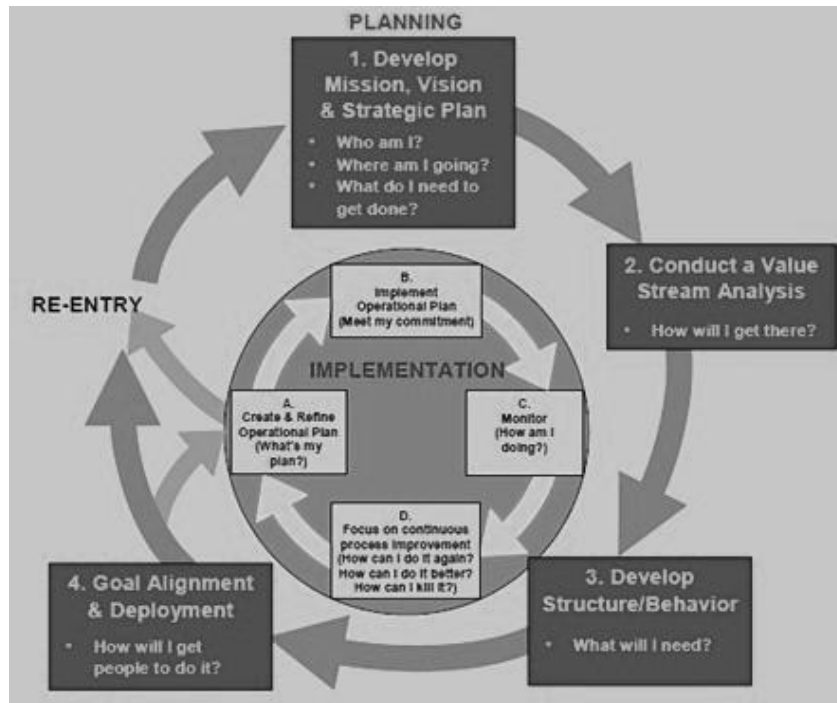


Figure 7. The Continuous Process Improvement Deployment Cycle.
Source: DOD (2006).

The planning cycle begins with developing the mission, vision, and strategic plan. This practice is not new to CPI and is common to leaders within the Marine Corps. Step 2 is to conduct a value stream analysis. This process usually consists of developing a current state and future state process map to allow practitioners to identify value-added and non-value-added steps within both processes. This process involves subject matter experts involved in the process and is viewed from a customer perspective to gain understanding of value and non-value steps. Step 3 is to develop the structure/behavior. This is similar to the foundational concepts discussed earlier. A strong, knowledgeable staff must work together throughout the organization. The structure for these interactions involves forming hierarchical teams that have specific authority and tasking to accomplish the organization's mission, vision, and plan. Step 4 is goal alignment and deployment. It is crucial that each project, metric, and resource allocated is in line with higher headquarters' goals and mission. Creating gains at subordinate levels must always

provide gains up the chain. This ensures critical resources are not wasted on projects that do not benefit the DOD as a whole.

The implementation plan is the action plan for CPI. It involves the key roles and leadership mentioned above and focuses on the use of CPI methodologies focused above. The four steps are to create and refine the operational plan, implement the operational plan, monitor the implementation, focus on CPI, and re-enter as necessary.

The third core area is the operational plan. As discussed, this is the action plan for CPI and must support higher headquarters' plans. The plan should articulate the actions required during execution, build on existing best practices of the organization, and expand the use of CPI within the organization.

The fourth core area is change management. CPI is a new way of problem solving, and at its core is still a methodology and not the answer. Change management involves guiding an organization from the old way of problem-solving through a data-driven methodology to achieve higher efficiency and effectiveness. Key leaders and shared knowledge are required to implement any change on an organizational level. This is why this is a core area within the framework. Without an active implementation of change driven from the top-down, it is very difficult to merge CPI pockets of success to a CPI-integrated successful organization.

The last core area is metrics. This is the heart of CPI methodology and must be selected in line with the overall strategy and voice of the customer. Choosing the right metrics ensures the results are interpreted correctly. There are two categories of metrics, leading and lagging metrics. Leading metrics are outcome-based and help forecast the future state. These are usually internal to work stations and signal later metrics down the process. Lagging metrics are big picture metrics that take into account past actions. Cycle time of a process is a lagging metric that is useful for data collection but does not allow practitioners to effect change on the process. Practitioners should focus on leading metrics for implementing changes to the process. Regardless of the metric used, there are five common characteristics of each. They must be valid, obtainable, accurate, repeatable, and actionable. These five core areas are critical to establishing the DOD CPI framework

for an organization. Without a strong understanding and implementation plan for each of these areas, the likelihood of overall CPI organizational success is limited.

c. The Continuous Process Improvement Assessment Model

The model used to analyze the CPI program is found in Attachment D of the *CPI Transformation Guidebook*, entitled “CPI Progress Assessment.” The CPI Progress Assessment is designed to be used internally or externally and consists of three levels of assessment. The first is a quick assessment consisting of 10 questions without quantitative answers. The maturity assessment tool is designed to evaluate CPI maturity for an organization. The third assessment is an advanced CPI assessment tool for an organization striving for world-class recognition. For the purpose of this project, an external team utilizes the maturity assessment model to assess the CPI maturity of the organization. Sections 1–4 of Annex A list the questions required for the planning phase of the maturity assessment tool. Sections 5–8 of Annex A list the questions required for the implementation phase of the maturity assessment tool.

The CPI maturity assessment tool focuses on evaluating the CPI deployment cycle of planning and implementation. There are layered questions within each step of the deployment cycle and a rating of one, or not yet started, to five, or transformation evident. This allows a cumulative average for each step to be calculated. A cumulative average of less than three is equivalent to the beginner stage of CPI organizational action. A cumulative average of three to four is equivalent to the intermediate stage of CPI organizational action. A cumulative average of four to five is equivalent to the advanced stage of CPI organizational action (DOD, 2006).

4. Contracts

Warfighters generate requirements that the supporting Supply or Purchasing section acquires through local buys. However, requirements that cross the micro-purchase threshold are sent to the Regional Contracting Office (RCO). For clarity and understanding, the current micro-purchase thresholds are \$3,500 for supplies, “\$2,000 for construction subject to the Davis-Bacon Act, or \$2,500 for services subject to the Services Contract Act” (Indian Health Service, n.d.). The Federal Acquisition

Regulations (FAR), Defense Federal Acquisition Regulation Supplement (DFARS), and other statutes govern Marine Corps acquisitions and contracting.

a. Contract Management

Garret (2005) described contract management as “the art and science of managing the contractual agreement throughout the contracting process” (p. 22). This includes many administrative activities, such as constructing and submitting requests for proposal, proposal evaluation, contract award, contract work start and implementation, measurement and evaluation of work completed, and payment calculations. The various functions require many partners in the process, including government contracting officers, technical experts, contractors, and financial managers. This project investigates two implements that can be used to improve contract management, and these are the Quality Assurance Surveillance Program (QASP) and the Contracting Officer Representative (COR).

(1) Quality Assurance Surveillance Program

According to Garrett and Rendon (2005), there is an “increased use of outsourcing, privatization, and competitive sourcing, combined with the increased use of performance-based contracts (PBCs)” (p. 6). These PBCs are then described to contain five essential elements:

1. Performance Work Statement (PWS), also known as a performance-based statement of work (SOW);
 2. Quality assurance surveillance plan (QASP);
 3. Performance-based metrics;
 4. Contractual incentives (positive and/or negative); and
 5. The right pricing arrangement (type of contract).
- (Garrett & Rendon, 2005, p. 6)

The PWS is not prescriptive in the method used to perform the work, but rather relies on the supplier to utilize best practices and expertise to provide the outcome described. The performance requirements laid out in the PWS should be objective, subjective, and measurable. Garrett and Rendon (2005) stated,

The QASP is the plan that will be followed to ensure that the buyer receives proper performance. The information developed by this plan provides objective evidence of acceptable performance and also provides

the means whereby deductions may be properly taken for unacceptable performance. (p. 7)

The following are elements usually contained within the QASP:

1. A statement of the plan's purpose
2. The names of the technical representative, or quality assurance evaluator, including alternates;
3. The specific authority and responsibilities of these individuals;
4. Instructions on how to use the plan;
5. A surveillance schedule;
6. The surveillance methods;
7. Appropriate documentation for each method;
8. The performance requirements summary;
9. Sampling guides for each task to be sampled; and
10. Deduction and incentive formulas, as appropriate. (Garrett & Rendon, 2005, p. 7)

FAR 37.604 details the responsible party for submission of the QASP, while FAR 46.401 specifies what should be included in the QASP.

b. Contract Types

There are a few categories of contracts that the government can use to structure a relationship with a contractor. These include firm-fixed price, cost-reimbursement or unit-price contracts, and time-and-material contracts. These are further divided into sub-categories, which are listed in Figure 8. Extracts from the FAR provide guidance on the appropriate use of each contract type and are listed as follows:

FAR 16.202-1 states,

A firm-fixed-price contract provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract. This contract type places upon the contractor maximum risk and full responsibility for all costs and resulting profit or loss. It provides maximum incentive for the contractor to control costs and perform effectively and imposes a minimum administrative burden upon the contracting parties. The contracting officer may use a firm-fixed-price contract in conjunction with an award-fee incentive and performance or delivery incentives when the award fee or incentive is based solely on factors other than cost. The contract type remains firm-fixed-price when used with these incentives.

FAR 16.301-1 states,

Cost-reimbursement types of contracts provide for payment of allowable incurred costs, to the extent prescribed in the contract. These contracts establish an estimate of total cost for the purpose of obligating funds and establishing a ceiling that the contractor may not exceed (except at its own risk) without the approval of the contracting officer.

FAR 16.601 states,

A *time-and-materials contract* provides for acquiring supplies or services on the basis of—

(1) Direct labor hours at specified fixed hourly rates that include wages, overhead, general and administrative expenses, and profit; and

(2) Actual cost for materials

Contract Categories and Types		
Fixed-Price Contracts	Cost-Reimbursement or Unit-Price Contracts	Time-and-Materials Contracts
<ul style="list-style-type: none">■ Firm-fixed price■ Fixed-price with economic■ Price adjustment■ Fixed-price incentive	<ul style="list-style-type: none">■ Cost-reimbursement■ Cost-plus-a-percentage-of-cost■ Cost-plus-fixed-fee■ Cost-plus-incentive-fee■ Cost-plus-award-fee	<ul style="list-style-type: none">■ Time-and-materials■ Unit price

Figure 8. Contract Categories and Types. Source: Garrett & Rendon (2005, p. 11).

(1) Contract Incentives

In contracting, there are various incentives that can be used to ensure that both parties adhere to the cost, schedule, and performance terms of the contract. These incentives include the use of a specific contract type, incentive fees, award fees, award terms, and others. The use of the firm-fixed price (FFP) contract is arguably the best method to ensure that both parties abide by the contract. In the simplest example of a firm-fixed price contract, the contractor performs the work or delivers the product, the

designated government recipient inspects and accepts the work or product, and the contractor receives payment.

According to Garrett and Rendon (2005), “the fundamental purpose of contract incentives is to motivate desired performance in one or more specific areas” (p. 13). These incentives can then be subjectively or objectively based. Objective measurement relies on some form of mathematical calculation to determine whether the incentive is to be awarded. Subjective measures, on the other hand, rely on an evaluation based on opinion and are measured against some predetermined value scale. Garrett and Rendon (2005) then stated, “Further, both classifications of contract incentives are typically categorized as either positive (rewards, that is, more money) or negative incentives (penalties or less money) or some combination thereof” (p. 13).

According to FAR 16.404,

Award-fee provisions may be used in fixed-price contracts when the Government wishes to motivate a contractor and other incentives cannot be used because contractor performance cannot be measured objectively. Such contracts shall establish a fixed price (including normal profit) for the effort. This price will be paid for satisfactory contract performance. Award fee earned (if any) will be paid in addition to that fixed price.

The award fee determination happens at specified times during the contract. Award terms are awarded based on the performance over the contract term. This incentive is reviewed and determined prior to the completion of the current contract. One example of an award term would be a contract awarded for a base year plus four option years. This means that the contractor will perform for one year, and the work will be evaluated to determine whether that contractor will be rewarded with continuing that work for another year, up to a total of five years. Figure 9 depicts types of incentives along a scale reward or penalty continuum.

Contract Incentives			
Types of Incentives	Positive (rewards)	No Reward or Penalty	Negative (penalties)
Objective Incentives			
Cost performance	Under budget ←→	On budget	Over budget ←→
Schedule or delivery performance	Early delivery ←→	On-time delivery	Late delivery ←→
Quality performance	Exceed requirements ←→	Achieve requirements	Did not achieve requirements ←→
Subjective Incentives			
Award-fee and other special incentives	Exceed requirements ←→	Achieved award-fee plan	Did not achieve requirements ←→

Figure 9. Contract Incentives. Source: Garrett & Rendon (2005, p. 15).

(2) Contract Monitoring

Once the contract is awarded, the performance must be monitored. This is typically accomplished either during the production process for large products by government inspectors at the manufacturing plant or during the performance of the service by a Contracting Officer Representative (COR). The COR is typically a subject matter expert assigned by the requirements generator to review the work performed in accordance with the contract. The COR has a responsibility to report the successes and failures of the contractor to the contracting officer. However, the COR does not have the authority to change or alter the contract terms or direct the contractor to change the product or service. If changes are needed, then the contracting officer should be informed to take appropriate action.

c. Win–Win Outcomes

Contract terms and conditions are one component of a successful contracting action. Building relationships is another way to enable success in contracting. According to Brown, Potoski, and Van Slyke (2013), there are three parts to managing contracts for complex products and services. The first is understanding the complexity of the product or service, the second is specifying the rules of the exchange, and the last is managing the relationship.

Understanding the complexity is important because complexity means uncertainty, and this can lead to ambiguity in the contract. Risk can increase or decrease on either the government or the contractor depending on the contract type. These contract types with associated risk are shown in Figure 10.

When specifying the rules of the exchange, there are three types of rules that can be identified: “product rules define the characteristics and capabilities of the product being sold; exchange rules define the terms of the exchange; and governance rules define how the government and vendor will interact in implementing the contract” (Brown et al., 2013, p.15). All three help spell out the relationship between the government and contractor.

Managing the relationship, the final component, enables a win–win outcome. Two behaviors can emerge during the course of the contract. Cooperative behavior occurs when

both the government and the seller choose to forgo the opportunity to exploit contract ambiguities for their own gain and at the other’s expense. Each chooses instead actions that generate greater gains for both, following the win-win spirit, if not the letter of the contract. (Brown et al., 2013, p.16)

The other is uncooperative behavior in which either party looks out for its own interest while trying to gain an advantage over the other. For example, a contractor provides services to the letter of the contract when he or she knows a better, more efficient and time-saving method to complete the job.

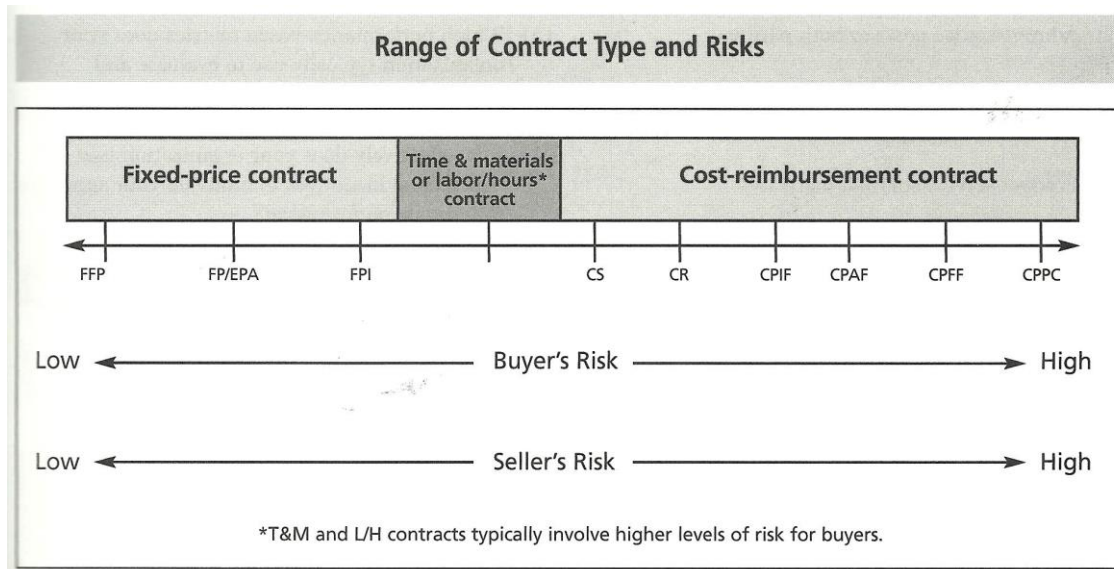


Figure 10. Range of Contract Types and Risks. Source: Garrett & Rendon (2005, p. 19).

C. CHAPTER SUMMARY

This chapter provided a comprehensive view of the literature relative to our thesis topic. The background provided a look at the Marine Corps Supply System and specifically the SMU's internal operations. It provided details of the way the Marine Corps utilizes CPI. Finally, this chapter enabled the reader to better understand the framework used in government contracting for supplies and services. Data gathered relative to the aforementioned areas is discussed in Chapter III.

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III. DATA COLLECTION

This chapter provides the data collection efforts. The chapter begins with a discussion of the supply publications and procedure documents utilized in SMU operations. Next is a presentation of the continuous process improvement efforts conducted at the CPEN SMU. Finally, this chapter concludes with details from current contracts used to support the logistics support efforts by the two SMUs.

Initial data gathering efforts began with phone calls and emails with the First Marine Logistics Group (1st MLG) SMU OIC. Follow-on discussions and site-visit coordination were conducted with the CPEN Process Reform OIC. The site visit occurred August 18–21, 2016. At the CPEN SMU, the project team toured the location to collect all CPI data and SOP documents used for this project. During the same trip, team members were directed to the RCO to discuss and collect data on contracts relative to logistical support operations of the SMU. During discussions with the CPEN RCO director of contracting, the team received the vehicle operator contract for SWRFT.

The second site visit was initiated and coordinated via phone calls and email with the CLNC SMU OIC. Once on site, the team made contact with the CLNC SMU operations officer (OPSO). During this site visit, the team toured the location and collected data on two SMU operation equipment sets that had active contracts. The team was then directed to visit the CLNC RCO and speak with the deputy contracting officer to collect the two contracts.

A. SUPPLY PUBLICATIONS AND PROCEDURE DOCUMENTS

The Marine Corps utilizes MCOs and MCWPs in order to provide the necessary governing policy and guidance in an effort to effectively manage the entirety of the Marine Corps supply chain in a uniform manner. However, given the different mission sets, geographical locations, personnel numbers, and organic and non-organic supply and logistical assets for each MEF and their associated supply chains, the SMUs must utilize different SOPs, supply procedure notices (SPNs), and users manuals (UMs) in order to effectively manage and leverage their internal processes and capabilities. These SOPs,

SPNs, and UMs build upon the governing policy guidance from the MCOs and utilize the doctrinal supply and logistics foundations found in MCWP 4–11.7, *MAGTF Supply Operations* (DON, 1998), and MCWP 4–7, *Tactical-Level Logistics* (DON, 2000). In collecting the data necessary for this project, a vast difference was seen between the CLNC and the CPEN SMUs in regards to supply chain management doctrine as described in the MCWPs. This difference comes in the form of a signed and published SMU SOP for the CPEN SMU, while the CLNC SMU simply uses a number of published SPNs and the UM 4000–125 in order to manage its supply chain (DON, 2015).

1. Camp Lejeune’s Supply Procedures Notices and the Marine Corps User’s Manual

During the data collection period of this project, a signed and published CLNC SOP was not available for collection and analysis. Currently, the CLNC SMU utilizes the locally-generated SPNs and the UM 4000–125 in order to facilitate the execution and management of its supply chain (DON, 2015). All documents are found on the II MEF SharePoint that enables Marines working both in the SMU and at the supported units to access the necessary informational documents and templates to requisition material and supply-related services from the SMU. During the execution of this project, the CLNC SMU was in the process of updating and publishing eight SPNs for the effective management of its supply chain. These SPNs included the following titles:

- Due and Status File (DASF) Reconciliation SPN 8–15,
- Direct Support Inventory (DSI) SPN 14–15,
- Item Master Organization (IMO) Load SPN 3–15,
- Lateral Support SPN 14–16,
- Rollback SPN 15–15,
- Supply Discrepancy Report (SDR) SPN 6–15,
- Walk-Thru SPN 3–16, and
- SMU Systems Outage SPN 5–16.

The CLNC also shared the UM 4000–125, *Retail Supply and Maintenance Execution Procedures*, which provides updated procurement and protocols for current Marine Corps–wide supply support policy. This order focuses on not only supply support and readiness but also maintenance, maintenance management, and logistics management within the retail supply level for the Marine Corps (DON, 2015).

2. *The Camp Pendleton Standard Operating Procedure*

The CPEN SMU currently utilizes a signed and published SOP that came into effect in December 2015. It is the ninth revision of the order and is named *Supply Management Unit Standard Operating Procedures* (SMU-SP-0001). The scope of the SOP identifies processes and procedures for daily operations of all sections within the SMU. The information provided offers guidance for SMU personnel on administering supply support to all units within I MEF (SMU, 2015, p. 10). This SOP is the governing document for all supply support and supply-related activities aboard MCB CPEN.

3. *The Camp Pendleton Garrison Mobile Equipment Standard Operating Procedure*

In January 2010, the CPEN Garrison Mobile Equipment (GME) SOP was published in order to provide policy, procedures, and instructions for the employment of GME that could be utilized throughout the Marine Corps Installations West (MCIWEST) region. This SOP establishes the processes and procedures that govern the expectations and responsibilities of SWRFT within the MCIWEST region. The GME SOP designated SWRFT as the organization responsible for the effective and efficient management of all GME assets within the MCIWEST region (USMC, 2010). The purpose of the GME SOP is to assign responsibility to SWRFT for control of the operation, proper use, and management of GME resources with the intent of exercising sound fleet management while effectively supporting mission accomplishment in a safe manner.

B. CPEN SMU CPI PROJECTS (2008–2016)

CPI data in scope for this project was sourced solely from the CPEN SMU Process Reform office. The maturity assessment tool was used to assess the CPEN SMU only. The Process Reform Section is in charge of CPI project implementation and dissemination. Data collected on CPI projects was from the period of 2008–2016. The SMU Process Reform Section took part in 41 projects during this time.

CPI projects focused on Lean, Six Sigma, and Theory of Constraints methodologies. Each project followed the DMAIC process. Every team was different and used different tools appropriate for each project. Every project followed the DMAIC process and completed each phase using the appropriate analysis tools. At the end of each project, an out-brief document was prepared and briefed that captured the DMAIC process tools used, the results compared to the expected outcome, and the impact of those tools using the metrics identified.

During the Define phase, each team conducted a range of steps tailored to its project. Some tools used include conducting a Strength, Weakness, Opportunity, and Threat analysis; GAP analysis; Voice of Customer; Charter; Pareto chart; and Suppliers, Inputs, Process, Outputs, and Customers. The Measure phase consists of the Value Stream Mapping, Spaghetti diagram, and Sort, Set in Order, Shine, Standardize, and Sustain (5S). The Analyze phase involves a scatter plot bar graph, infinity diagram, Failure Mode and Effects Analysis, and fishbone diagram. The Improve phase consists of visual displays, Kaizen, Kanban, and Design of Experiments. The last phase is the Control phase and consists of the measurable matrix, weekly Command and Staff report, and Weekly Quality Control report.

C. SMU OPERATIONS SUPPORTED BY CONTRACTS

During site visits to the CPEN and CLNC SMUs, the project team received copies of contracts related to logistical support for SMU operations. The following paragraphs provide a synopsis of those contracts. In total, three separate contracts were gathered and later analyzed, one from the CPEN SMU and two from the CLNC SMU.

1. *The Camp Pendleton Transportation Support Contract*

The CPEN SMU's last-leg shipping is supported by a CPEN installation contract for transportation. This contract enables the SMU to deliver maintenance parts to end-users throughout the designated area of responsibility (AOR). This labor hour and firm-fixed price (FFP) contract was awarded on September 1, 2014, for approximately \$3.6 million. The term is for a base year with four option years. The acquisition was restricted to a 100% small business set-aside under North American Industry Classification System (NAICS) 541614. The discount terms are "Net 30 days," which means that 100% of the payment is due within 30 days. The labor hours are associated with vehicle operators, and the FFP portion is associated with on-site contractor coordinator full-time positions.

The contract states, "This contract is to provide vehicle operators, with class A, Class B, and Class C drivers licenses, for the SWRFT" (Langdon, 2014, p. 311). There is a list of these requirements in Table 1.

Table 1. Description of Vehicles and Operators Identified in CPEN SMU Transportation Support Contract

Occupation Code	Description of Vehicles & Operators
31030	Bus Driver
31290	Shuttle Bus Driver
31361	Truck Driver, Light
31362	Truck Driver, Medium
31363	Truck Driver, Heavy
31364	Truck Driver, Tractor-Trailer
21020	Forklift Operator

The contract scope includes providing vehicle operators, a supervisor, and relevant transportation services for Marine Corps equipment and personnel throughout California and Arizona. The contract further spells out that these vehicle operators will drive and load SWRFT vehicles in geographic locations and estimated hours, as detailed in Tables 2 and 3. These geographic locations are MCB Camp Pendleton, CA; MCAS Miramar, CA; Marine Corps Recruit Depot (MCRD) San Diego, CA; MCAGCC Twentynine Palms, CA; MWTC Bridgeport, CA; MCLB Barstow, CA; and MCAS Yuma, AZ.

Table 2. Estimated Regular Labor Hours for CPEN SMU Transportation Support Contract

Estimated Regular Hours				
	Geographic Location: Estimated # of Regular Hours per Year	CLASS A Number of Estimated Hours	CLASS B Number of Estimated Hours	CLASS C Number of Estimated Hours
a.)	MCB Camp Pendleton, CA	25,705	52,691	6,630
b.)	MCAS Miramar, CA	713	1,234	63
c.)	MCRD San Diego, CA	1	240	126
d.)	MCAGCC 29 Palms, CA	2,836	10,582	1,567
e.)	MWTC Bridgeport, CA	24	746	907
f.)	MCLB Barstow, CA	169	1,923	158
g.)	MCAS Yuma, AZ	977	7,472	305

Table 3. Estimated Overtime Labor Hours for CPEN SMU Transportation Support Contract

Estimated Overtime Hours				
	Geographic Location: Estimated # of Regular Hours per Year	CLASS A Number of Estimated Hours	CLASS B Number of Estimated Hours	CLASS C Number of Estimated Hours
a.)	MCB Camp Pendleton, CA	45	65	10
b.)	MCAS Miramar, CA	30	40	5
c.)	MCRD San Diego, CA	1	1	1
d.)	MCAGCC 29 Palms, CA	10	50	10
e.)	MWTC Bridgeport, CA	10	10	1
f.)	MCLB Barstow, CA	10	1	1
g.)	MCAS Yuma, AZ	25	40	1

The on-site contract coordinator (OCC) provided by the contractor is required to have commercial vehicle management experience. The OCC full-time position is required for no less than 2,080 hours/year. Class, geographic location, and regular/overtime hours as listed in Tables 4 and 5 separate the wage rates in the contract. The rates are governed by the inclusion of clause FAR 52.222-99, *Establishing a Minimum Wage for Contractors* (Deviation 2014-O0017), signed June 2014 (Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics [OUSD(AT&L)], 2014). This clause specifically states, “The Contractor shall adjust the minimum wage paid under this contract each time the Secretary of Labor’s annual determination of the applicable minimum wage under section 2(a) (ii) of Executive Order 13658 results in a higher minimum wage.” (Langdon, 2014, p. 332) It also states,

The Contracting Officer will adjust the contract price or contract unit price under this clause only for the increase in labor costs resulting from the annual inflation increases in the Executive Order 13658 minimum wage beginning on January 1, 2016. (Langdon, 2014, p. 332)

The areas used in Tables 4 and 5 are defined in the contract as follows. Area I consists of MCB Camp Pendleton, CA; MCAS Miramar, CA; and MCRD San Diego,

CA. Area II consists of MCAGCC Twentynine Palms, CA, and MCLB Barstow, CA. Area III is MCMWTC Bridgeport, CA. Area IV is MCAS Yuma, AZ.

Table 4. Regular Hourly Wage Rates for CPEN SMU Transportation Support Contract

Wage Rates (Regular Hours)			
Area	CLASS A	CLASS B	CLASS C
I	\$34.61	\$29.85	\$25.66
II	\$36.15	\$33.35	\$25.48
III	\$36.15	\$29.14	\$27.75
IV	\$27.59	\$26.18	\$25.29

Table 5. Overtime Hourly Wage Rates for CPEN SMU Transportation Support Contract

Wage Rates (Overtime Hours)			
Area	CLASS A	CLASS B	CLASS C
I	\$42.22	\$35.56	\$29.69
II	\$44.10	\$40.20	\$29.32
III	\$45.95	\$34.51	\$32.48
IV	\$32.30	\$30.29	\$28.78

The seven performance requirements are on contract pages 317 to 322. Each of these separate requirements list the required standard and acceptable quality standard. Additionally, there are deliverables required from the contractor. These deliverables were listed as A001 Training, A002 Testing, A003 Management Plan, and A004 Quality Assurance.

Required training for motor vehicle operators includes a SWRFT licensing test. The contractor is required to provide training in the following areas: blocking and bracing; proper use of binders, chains, and straps; proper load placement; backing of trailers; and coupling and uncoupling of combination units.

2. *The Camp Lejeune Supply Management Unit Contracts*

The CLNC SMU identified that there are only two contracts associated with providing logistical support within the AOR. The first was for carousel maintenance for 14 white horizontal carousels and associated components. The second was for 12 stock lifts and associated preventive maintenance for the storage section. Both of these contracts are for equipment utilized during internal warehousing operations.

As it relates to this project, the provision of these contracts was restricted by not including vendor or specific pricing information. Additionally, the contract copies received were identified as “Sensitive Acquisition Information and should be limited in distribution”—specifically for the team’s eyes only—per direction from the director of contracts MCIEAST RCO. This restriction does not limit the assessment of these contracts, in the project team’s estimation.

a. *The Carousel Maintenance Contract*

The CLNC SMU’s FFP contract for carousel maintenance was awarded on September 29, 2014, for \$46,990 and detailed in 22 pages. The term was for a base year with two 12-month option periods. The acquisition was restricted to a 100% small business set-aside under NAICS 811310. The discount terms are “Net 30 days,” which means that 100% of the payment is due within 30 days. The services and duties include the following:

1. Contractor shall provide preventive maintenance to include all parts, labor and travel for 14 white horizontal Carousel Interface Controllers (CIC), 14–530 keyboards, 7 liftables, and 2 Kardex Industrier Titan II vertical carousels. All supplies are included except storage bins or totes. The contractor shall determine the repairs necessary for any non-functioning equipment. If equipment is not able to be repaired due to non-availability of parts due to obsolescence or complete component failure that requires total replacement, the contractor shall notify the Government Technical Representative and the Contracting Officer in writing of suggested repairs and estimated costs. A written determination will be made by the Contracting Officer and Government Technical Representative as to how to proceed. The Contractor shall not proceed without written approval from the Contracting Officer.
2. Contractor shall respond to repair calls within 6 business hours and repair non-functioning equipment within 48 business hours.

3. Preventative maintenance will be performed at least once every three months.
4. Contractor shall provide unlimited technical support by.
5. Contractor shall provide 24 hour maintenance in any situation that requires items to be operated 24 hours a day.
6. Contractor shall only send qualified technicians to work on the equipment. (Fulks, 2014, p. 5)

The base year contract was for three Contract Line Item Numbers (CLINs), which are described as follows:

CLIN 0001 was a full service support agreement to ... provide preventive maintenance to include all parts, labor and travel for 14 White horizontal Carousels and [Carousel] Interface Controllers (CIC), 14-530 keyboards, 7 liftables, 2 Kardex Industiever Titan III vertical carousel in accordance with the statement of work at 2d Supply Battalion, CLR 25, 2d MLG, BLDG. 1012, O Street, Camp Lejeune, North Carolina 28546. CLIN 0002 was to determine functionality and repair of Carousel Interface Controllers (CIC). CLIN 0003 was for repair of 3 carousels. White CC04 AND CC07, plus Kardex Titan III SCC01. (Fulks, 2014, p. 3)

It is believed that the option years would have been exercised for 14 vice four white horizontal carousels and CICs.

The contract also spelled out the deliveries and performance, on-call maintenance service/service calls, preventive maintenance service requirements, exclusions, contractor's unauthorized work performance, procedures for placing repair calls, responsibility (for contractor's personal supplies), and unacceptable performance. The COR's role and responsibilities, for monitoring purposes, were spelled out under references to the Government Technical Representative (GTR).

b. The Stock Lifts Contract

The CLNC SMU's FFP contract for stock lifts was awarded on February 12, 2016, for \$54,360 and is detailed in 14 pages. The term is 12 months. The acquisition was unrestricted under the NAICS 532490. The discount terms are "Net 30 days," which means that 100% of the payment is due within 30 days. The following are the services and duties as spelled out in the contract:

We are requesting the lease of 12 Lifts with an accompanying 12 month maintenance contract that provides coverage and service on the lifts. The

Lifts are a critical requirement that with their use allows for the timely completion of the sections daily workload. These machines are utilized to pick supplies on multiple levels and locations from our warehouse inventory in support of II MEF using units. (Kostem, 2016, p. 4)

Additional uses for the stock lifts were also described as follows:

The following request is needed to support the Storage daily mission of picking, packing, stowing, and shipment of 2d Supply Battalion assets to all supported II MEF using units. In addition to the stated information, the machines being requested will also be used to assist with the conducting of inventories and the care and storage of the section's assets in order to maintain accurate accountability and serviceability of all Class IX supplies. (Kostem, 2016, p. 4)

There were two CLINs identified. CLIN 0001 was for leasing ten work assist vehicle/stock picker lifts with the minimum technical requirements. CLIN 0002 was for maintenance:

Preventative maintenance is included in this contract at no additional cost. Conduct preventative maintenance, labor and clean parts on 12 lifts. Excludes anything that isn't covered under preventative maintenance. Perform planned preventative maintenance at regularly scheduled intervals (250 hours or every 90 days). (Kostem, 2016, p. 4)

The contract was also limited by spelling out the following:

Repairs necessary to restore broken, damaged, or inoperable parts, outside of normal preventive maintenance, are not authorized to be conducted under this contract. Technical maintenance and parts necessary to return lifts to normal working order and prevent work stoppage or "down time" is not authorized under this contract. Service calls for work stoppage repairs are not authorized under this contract. (Kostem, 2016, p. 5)

However, the contract later includes authorization for these repairs when initiated by the OIC and/or the Staff Noncommissioned Officer In Charge (SNCOIC) of the storage sections.

D. CHAPTER SUMMARY

This chapter provided a synopsis of all the data collected. It started off by detailing the manner in which the CLNC and CPEN SMUs operate under SPNs, MCOs, and SOPs. It provided details about how the Marine Corps utilizes CPI. Finally,

this chapter concluded with the information gained from the contracts gathered. The analysis of this data is discussed in Chapter IV.

IV. ANALYSIS

Chapter IV provides the analysis of the data collected and is broken down into two areas: internal operations and distribution capabilities. This chapter begins by examining the internal operations of both CONUS SMUs, specifically the CPI program at the CPEN SMU and the contracts supporting the material handling operations of the CLNC SMU. Next is an analysis of the distribution capabilities that both SMUs utilize in regards to their supply support operations. The focus of the distribution capabilities is centered on an analysis of the two methods utilized for distribution operations and an evaluation of the CPEN SWRFT contract.

A. INTERNAL OPERATIONS

In the execution of this project, a significant difference was identified in the internal operations of each SMU. Currently, the CPEN SMU has a published SOP that delineates the processes and procedures for all its internal sections and operations. Included in this SOP is the CPI program that is managed by the CPEN SMU's Process Reform Section. This section utilizes the published SOP with inputs from both the SMU OIC and Operations Section in order to implement CPI efforts throughout the year. This published SOP and Process Reform Section have a positive effect on SMU operations in that they enable the SMU to readily evaluate its baseline operations on a daily basis for positive and negative impacts. The implementation of CPI projects to maintain and improve the published standard enables the SMU to better manage and utilize its supply chain in supporting the warfighter. The CLNC SMU does not yet have a published SOP in place, nor does it have an active Process Reform Section. Currently, the CLNC SMU manages its supply support operations through the use of a number of SPNs that have the beginnings of becoming a publishable SMU SOP in the future.

1. The Camp Pendleton Continuous Process Improvement Program

The CPEN Process Reform Section instituted a CPI program in 2008; this section is currently led by a Lean Six Sigma black belt. The team analyzed the maturity of the current CPI program using the DOD Maturity Assessment Tool. The team also conducted an analysis of the projects completed from 2008 through June 2016.

a. The Continuous Process Improvement Maturity Assessment Tool

The CPI Maturity Assessment Tool evaluates organizations' adherence to the deployment cycle's two phases of planning and implementation. The planning phase consists of four steps: (1) develop, mission, vision, and strategic plan; (2) conduct a value stream analysis; (3) develop structure/behavior; and (4) goal alignment and deployment.

(1) The Planning Phase

The first step of the planning phase scored a 4.75/5. This score is based on the development of the SMU SOP, which incorporates language in support of a CPI program and an organizational emphasis on quality control. The second step of the planning process scored a 3/5. This score is the lowest identified by our team and may be skewed due to insufficient data collected during our site visit. The organization scored 4/5 in setting clear goals and involving key stakeholders. This assessed score was due to the implementation of the Process Reform Section being actively tied into SMU operations. In-process scores of 2 were awarded for visible enterprise value streams and defined future states; this low score is attributed to the lack of an overall value stream for the SMU as a whole. The third step of the planning process scored a 5/5; this high score is due to the program structure maturity. Change is also encouraged throughout the organization, as demonstrated by the increase in projects in 2015 and 2016. The final phase of the planning process scored a 5/5. The high visibility of the program is evident through visual indicators. A wall in the middle of the SMU is dedicated to CPI efforts and provides a physical reminder of the importance of the program to all organizational members. Out-briefs are also required at the end of every project and are measured by metrics in line with the goals of the organization. These metrics are tied to organizational

goals and briefed to the organization's leadership. This requirement exemplifies the goal alignment and deployment of the CPI program.

(2) The Implementation Phase

The second phase is the implementation phase. This phase consists of four steps: (1) create and refine the operational plan, (2) implement the operational plan, (3) monitor, and (4) focus on CPI. The implementation phase scored a 4.5/5 overall. This overall score is indicative of a mature CPI program. The program has been ongoing for eight years with a renewed focus on project completion within the last two years. The first step scored a 4.5/5 there is high evidence of an effective training program and operational plan throughout the organization. The second step scored a 5/5; all parts of the organization have completed projects and continue to strive for advanced project deployment. Evidence suggests every project follows the DMAIC process and has a detailed plan prior to implementation. The third step scored a 5/5; this step focuses on monitoring. Each project identifies the metrics used prior to implementation and compares results against the metrics identified in the define phase of the project. The last step scored a 4.17/5; this step focuses on CPI of the organization. This is a continuous endeavor and should not be overlooked. The lowest sub-score during this step was a 3/5, which evaluated if the organizational plan is regularly refined. There was no evidence of scheduled meetings on or past refinement of the overall plan. This could be due to insufficient data collection methods during our site visit. Overall, the focus on CPI is very high and senior leadership is very involved in all aspects of the program. The CPI program is briefed regularly by the Process Reform Section to the battalion commander to allow refinement or guidance.

b. Project Analysis

The CPEN Process Reform Section guided the completion of 41 projects from 2008 through June 2016. The team categorized the projects by process owner, year completed, projects gained, and type of project. Each graph in this section provides easily digestible information for analysis and reassessment of the program.

(1) The Process Owner

Over 55% of the projects were initiated by two sections: Storage (37%) and P3 (22%). The Process Reform Section conducted four projects for 10% of the total percentage of completed projects, and 12% of all projects were outside the SMU. Storage and P3 are an integral part of daily operation of transporting requisitioned supplies to the customer. The focus on these two departments shows the ability for efficiencies to be gained through reduction of touch time and improvement of processes.

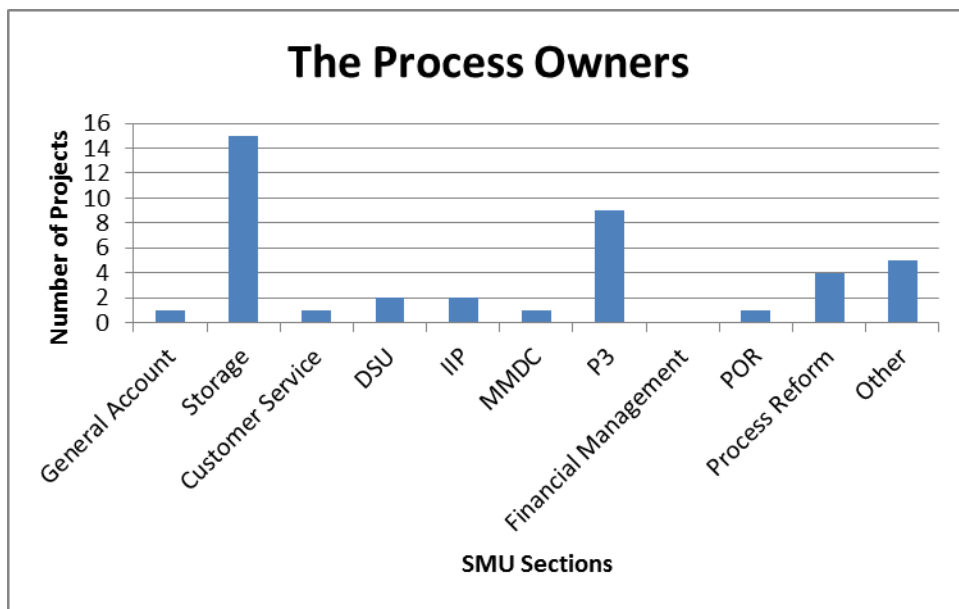


Figure 11. I Marine Expeditionary Force Supply Management Unit Process Owner Projects

(2) Projects by Year

The data begins in 2008 with two projects being conducted. From 2008 to 2012, only five projects were completed, which is approximately 12% of all of the projects. The years 2013 and 2014 account for 10 complete projects or approximately 25% of the overall projects. In 2015, there were 19 completed projects, and thus far in 2016, there are seven completed projects. These last two years account for over 63% of all projects completed for the CPEN SMU. See Figure 12 for data points.

The upward trend in project completion correlates to a maturing knowledge base and cultural acceptance of the program. The data indicates that as more Marines are introduced to the CPI process and sustain their training, the number of projects increases. This is an expected outcome as an organization develops its leaders and CPI practitioners..

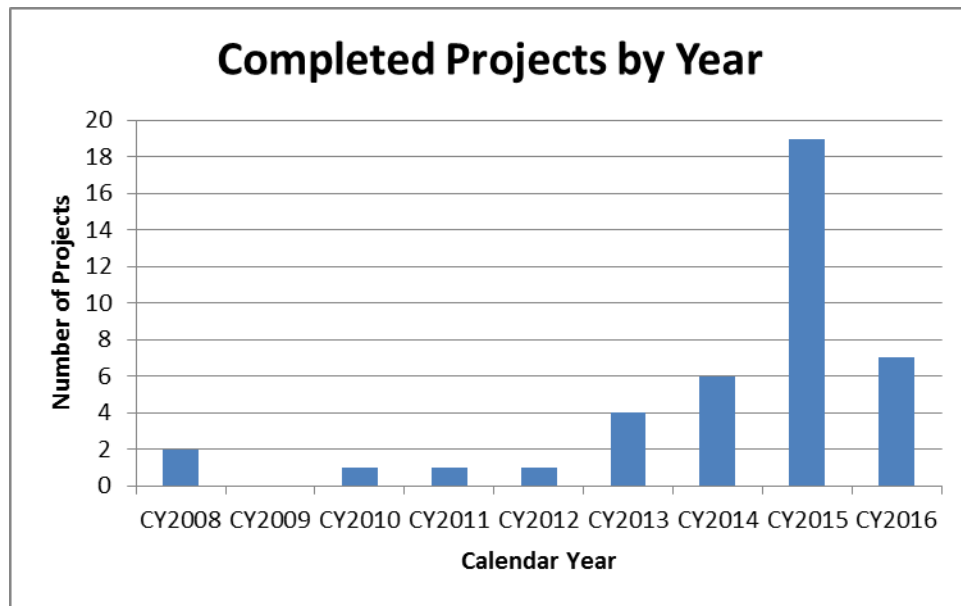


Figure 12. CPEN SMU Projects Completed by Year, 2008–June 2016

(3) Project Objectives

Figure 13 presents the 41 projects' resource objectives in six categories: time, money, quality, space, safety, and security. These are further categorized into primary, secondary, and tertiary objectives. Time was an objective in over 80% of all projects. Space was a primary objective in 29% of all projects and additionally a primary, secondary, or tertiary objective in 39% of all projects. Quality and money were objectives in over 20% of all projects.

Time and space management were the two largest resources gained across all projects. These results indicate an effective CPI program focusing on passing internal improvements to the customer. Time efficiencies are passed down the supply chain, allowing for quicker response time and lower cycle time within the SMU.

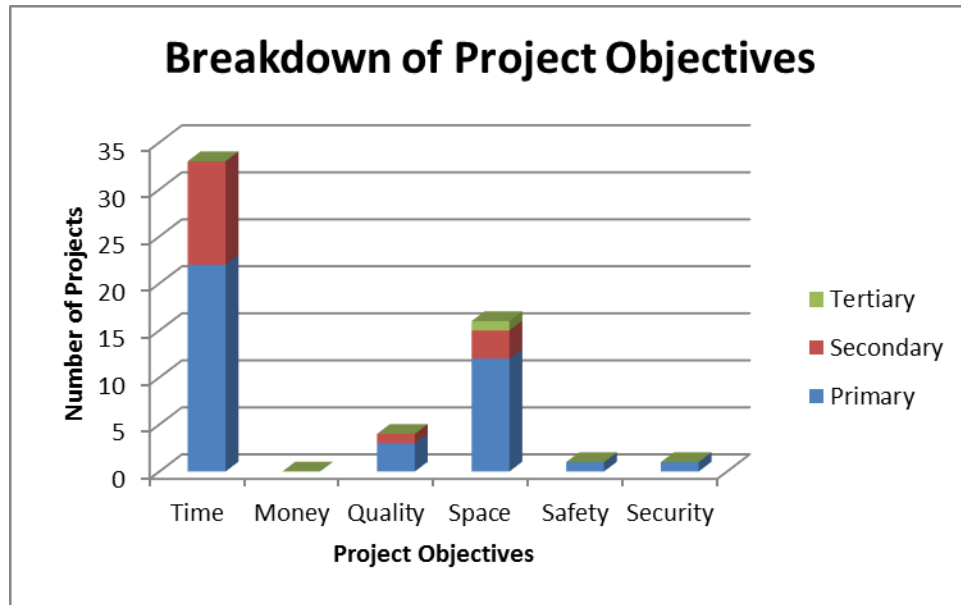


Figure 13. Camp Pendleton Supply Management Unit Projects' Six Resource Objectives

(4) Project Type

Figure 14 presents the 41 projects in two categories of Sort, Set in Order, Shine, Standardize, and Sustain (5S) and Process to distinguish the focus of each project. 5S projects focus on gaining efficiencies in the organization of workspaces and are considered a first step in laying the foundation for future CPI projects. 5S is used to ensure that time is not lost due to finding tools or reworking due to inaccurate work. The fundamental principle is to ensure that every tool has a specific place, visual aids allow for identifying out-of-place tools, and inventory times are reduced, freeing up resources to focus on value added processes. Of the SMU's 41 projects, 39% were 5S projects. 5S project completion demonstrates a growing use of CPI across the SMU organization. This percentage is also significant since 5S projects involve entire work sections, which creates "buy in" from the organization.

Process projects focused on improving an existing process to identify value added steps and eliminate or combine non-value added steps. The remaining 61% of the projects analyzed were focused on improvements in process. These projects demonstrate a mature CPI program within the organization and a majority of focus on process improvement.

Similar to 5S projects, the efficiencies gained are passed on to the customer. However, a focus on process improvement identifies an enhanced knowledge base to apply advanced CPI DMAIC tools to analyze customer problems and realize project results.

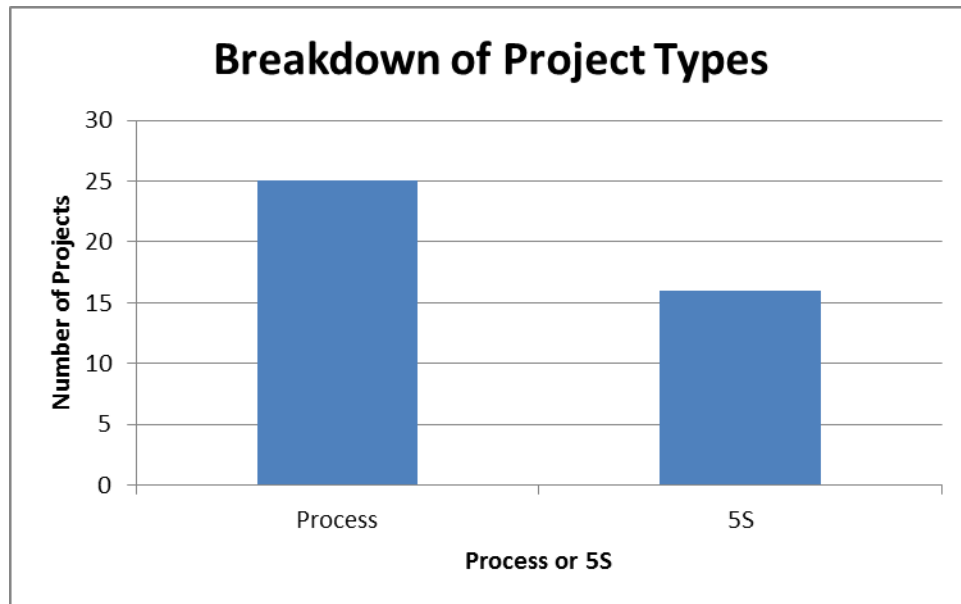


Figure 14. Camp Pendleton Supply Management Unit Total Projects by Type

2. *The Camp Lejeune Contracts*

The CLNC SMU submitted requirements to support its internal material handling operations and, in turn, the CLNC RCO awarded two FFP contracts in order to support this effort. These contracts directly support the timely and efficient requisition process of the SMU to pick, pack, and prep for shipment the requisitions submitted by the supported units. For this project, there were only two contracts analyzed for the CLNC SMU internal operations: the carousel preventive maintenance and electric work assist vehicle/stock picker lift contracts.

a. *Carousel Preventive Maintenance*

The CLNC SMU's FFP contract for carousel preventive maintenance ensures the continued operation of the current carousel system. The term is for a base year with two option years. The contract type and award term included in the contract are sufficient to

incentivize positive behavior by the contractor. This provides the CLNC SMU with flexibility in offering the contractor additional contract terms as long as the level of performance is satisfactory. However, the contract does not spell out evaluation criteria for success in awarding the option year terms. In an effort to provide transparency, these evaluation criteria should be objective and available for all parties to the contract.

The preventive maintenance schedule and repair timeline in the contract ensures all parties have a common understanding and enables the monitoring process. The contract stipulates the responsibilities of the government technical representative, also known as the COR. Additionally, the contract clearly articulates unacceptable performance measures and an adequacy reporting process. These monitoring mechanisms and quality assurance reports enable a feedback loop between the contracting officer, contractor, and customer.

This cumulative impact provides the CLNC SMU with improved internal operations and gained efficiencies while the carousels are in working order. The six-hour repair call timeframe and 48-hour downed equipment repair time appear sufficient in ensuring that equipment failure does not affect the warfighter. This ultimately provides a positive effect on the warfighter and their maintenance and supply support programs.

b. Electric Work Assist Vehicles/Stock Picker Lifts

The CLNC SMU's FFP contract for electric work assist vehicles/stock picker lifts fills a gap in capability for the CLNC SMU's Storage section. The organic forklift capability does not support the Storage section's ability to maneuver between and reach upper level shelving due to the current warehouse aisle layout. The spacing of these shelves is too narrow for the organic assets to maneuver. Due to these constraints, the unit requires a more compact work assist vehicle to enable stock picking efforts. This contract is currently operating a one-year life cycle without option years. This enables flexibility in evaluating these leased products and associated preventive maintenance to meet the requirements. However, a one-term award does not incentivize the contractor to lower the proposal costs. Additionally, the lack of option years means that this capability

must be competed again to renew it. Going through the contracting process takes considerably longer than does the renewal of an option year on an existing contract.

Monitoring and performance evaluation feedback for this contract is the responsibility of the Storage section OIC or SNCOIC. The turn-in of preventive maintenance receipts, verification of actual work completed, and daily operation of the leased work assist vehicles are the mechanisms for these monitoring and evaluation efforts. The Statement of Work is short, simple, and to the point, which provides a foundational understanding for the parties involved.

There are administrative errors within the contract that could undermine clear understanding among all responsible parties. This creates ambiguity and allows for the contractor to go by the details of the contract contradictory to the intent of the CLNC SMU. Providing 10 stock picker lifts and charging for preventive maintenance on 12 is one example. These clerical errors are easily remedied through a unilateral modification to ensure all parties have clarity on the requirement. Additionally, this change would ensure the contracting officer, contractor, and the CLNC SMU Storage personnel perceive the other party as behaving consummately and not in one's own self-interest.

The preventive maintenance aspect of the contract is confusing with respect to restoring any downed equipment when restoration is determined to be outside of normal preventive maintenance. It states that the contractor is not authorized to do any of this repair work under the delineated tasks. Later in the contract, under maintainability, the contract details conditions that the contractor could perform these types of repairs. These two areas of the contract contradict each other, which could lead to misinterpreting the actual letter of the contract.

This contract fulfills the requirement by the Storage section. However, the administrative errors and contradicting language could undermine the success of the contract if the contractor were to misconstrue the actual intent. During observation, these leased vehicles were effective and enabled the section to complete its mission. This ultimately generates a positive effect to the warfighter while the contract is in effect.

B. DISTRIBUTION CAPABILITIES

In the execution of this project, a summary of how the CPEN and CLNC SMUs currently control and manage their supply support operations can best be defined as employing a combination of two different distribution methods and one type of replenishment system in order to support the warfighter. The employment of these differing methods with the one type of replenishment system is based upon the availability of supplies, current capabilities available to each SMU, and the current published base orders and procedures applicable to each SMU. The two methods of distribution are the supply point distribution and unit distribution methods that are being used within a pull style replenishment system.

1. Supply Point and Unit Distribution Methods within the Pull Replenishment System

The CPEN and CLNC SMUs use a combination of the supply point distribution and unit distribution methods. To further expound upon these two methods,

In point distribution, the supported unit picks up the supplies from a central point established by the supporting unit...In unit distribution, the supporting unit (e.g., CSSE) delivers supplies to the supported unit. The supported unit will in turn distribute the supplies to subordinate elements. (DON, 2000, p. 3–6)

Both SMUs employ a combination of both methods of distribution by using Marine Corps and contracted resources that include transportation assets, material handling assets, and federal employees to deliver requisitioned supplies to the warfighter. The employment of both methods with differing resources has a positive impact on the supply chain in that it enables both SMUs to actively support the warfighter through flexibility and efficiency.

The CPEN and CLNC SMUs use the pull-style replenishment system. As its name suggests, “A pull system requires the consumer to submit a support request. This system provides only what the supported unit requests” (DON, 2000, p. 3–7). Being the intermediate supply activity for the Marine Corps, the SMUs do not push supplies to their warfighters given their limited capacity to execute such a task. The pull system enables

the SMUs to be more efficient in their mission since they only need to stock the supplies on hand that are most readily required by their supported units. Both SMUs utilize historical data and forecasting models in order to determine what to keep on hand and in what quantity. Although the pull system is the more efficient replenishment model, it is less responsive since the warfighter must first generate and submit the requisition before the SMUs will fulfill the order.

a. The Camp Pendleton Supply Management Unit Distribution Operations

The Garrison Mobile Equipment (GME) SOP governing the transportation operations of MCB CPEN that instructs the employment of the SWRFT contract has a direct positive effect on supply support operations for the CPEN SMU. SWRFT is tasked to provide federal employees and transportation assets to work in conjunction with SMU Marines in the execution of supply point distribution operations. Currently, the CPEN SMU receives requisitions from supported units and transports those requisitions to the CPEN MMDC for sorting and pickup by SWRFT transportation assets that are driven by federal employees. MMDC Marines schedule the SWRFT supply runs for all units supported by the CPEN SMU and act as pallet riders for the deliveries as well. SWRFT transportation assets and drivers make daily supply runs in and around MCB CPEN that enable the CPEN SMU to deliver all requisitions to supported units within a 48-hour window. SWRFT uses its own drivers, its own mechanics, and its own support staff to maintain its equipment and operations. The SWRFT agency also has a command and control section that works directly with the CPEN MMDC to ensure that the right assets with the right personnel are on hand in order to support SMU supply operations throughout the year. Distribution operations for I MEF currently rely on SWRFT-contracted support to conduct tasks typically executed by the Logistics Command Element (LCE) and 1st TSB.

The CPEN SMU also uses the unit distribution method that comes in the form of walk-through requests by supported units. Walk-through requests are requisitions that meet a critical maintenance priority that enable the supported units to request and pick up the desired supplies within a 24-hour period. Once a walk-through request is received and

approved by the SMU, Marines in the Storage section pull the requested supplies and prepare them for pickup by the requisitioning unit that uses its own Marines and transportation assets for pickup.

The implementation of the SWRFT contract for the CPEN SMU frees up SMU, MMDC, and 1st TSB Marines, including their transportation assets, from the scheduling and delivering of requisitioned supplies to supported units. The utilization of SWRFT drivers and assets with Marines acting as pallet riders also enables MMDC Marines to efficiently track all outbound and inbound shipments for MCB CPEN since all shipments are transported by SWRFT on a daily basis. This consistency, reinforced by the CPI projects executed under the guidance of the CPEN SMU Process Reform Section enables the streamlining of the entire supply chain from the warehouse to the warfighter. This streamlining of the supply chain coupled with contracted transportation support from SWRFT enables the SMU to efficiently provide supply support to MCB CPEN by leveraging the current organic and non-organic capabilities at its disposal within the current published orders and regulations for the base.

b. The Camp Lejeune Supply Management Unit Distribution Operations

The CLNC SMU operates in the same manner as the CPEN SMU except for the way it delivers its requisition supplies to the warfighter using the supply point distribution method. The CPEN SMU currently abides by Marine Corps supply doctrine and uses 2d TSB Marines and assets to schedule and pick up supplies from the SMU to deliver to units aboard MCB CLNC. For units stationed outside of MCB CLNC, the CLNC SMU works with the CLNC MMDC to schedule and later contract for transportation assets and drivers to pick up supplies for final delivery to the warfighter. The CLNC SMU also utilizes contracted material-handling equipment within its Storage section to pick and pull requisitions for later shipment.

Similar to the CPEN SMU, the CLNC SMU uses the unit distribution method in the form of walk-through requests in which supported units use their own Marines and assets to pick up requisitions as they are approved by the SMU.

**2. *The South West Regional Fleet Transportation Contract supporting
Camp Pendleton Supply Management Unit Operations***

The CPEN SMU utilizes transportation support through an installation contract with SWRFT for its distribution operations. Operating as a single regional purchaser, MCB CPEN includes the cost for this contract within its annual budget rather than the various units contracting individually for these transportation services. This enables economies of scale, minimizes redundancy, and improves dispatch efficiency.

The two contract types in the SWRFT contract are labor hours for vehicle operators and an FFP for the contract coordinator. The labor rate is set by statute, so there is little concern over fair and reasonable pricing contained within the contract for the required positions. The only variations in total contract costs are due to fluctuations in demand for transportation services. The base year and three option years enables contract-planning time savings and provides a positive incentive for the contractor to perform satisfactorily in order to earn the option year contracts.

The CPEN SMU is one of many supported units under this contract; there are no direct incentives tied to the performance level of support SWRFT drivers provide during CPEN SMU distribution operations. Distance to location and speed limits of the highways on designated routes dictate transportation timelines. There are limited efficiencies to be gained on the actual transportation timeline. However, there is significant impact on trips requiring more than six hours of round-trip travel. For example, a delivery to Twentynine Palms, CA, is cancelled if the driver does not leave by a certain time due to the distance and time required to make the entire trip. Also, this timeline is significantly impacted by traffic congestion during known hours of each day. Lastly, the requirement to provide overtime mitigation plan disincentives the contractor to work overtime hours.

The contract does not specify the designation of CORs by the supported units. The CPEN SMU provides pallet riders to ensure that the gear is offloaded and signed for at the various delivery locations. However, these Marines are not assigned or trained to conduct COR responsibilities. These pallet riders could easily provide actionable feedback on each driver's performance. This missing feedback loop could enhance the

contractor performance evaluation for awarding incentives, like additional award terms. There may be appropriate feedback mechanisms outside of the contract itself, such as the Quality Assurance Surveillance Program (QASP) or an agreement between the Marine Corps and the Department of Transportation. However, the project team did not review those documents outside the basic contract.

The current structure and incentives of the contract support numerous units throughout the Southwest region; however, there are no direct incentives to support the CPEN SMU distribution operations. The contracted support is set up on a regular daily schedule and doesn't change unless the SMU requests specific runs to be altered or cancelled. This provides a net positive effect to the warfighter due to the regularity of SWRFT delivery support along with efficient internal operations.

C. CHAPTER SUMMARY

This chapter provided a detailed analysis of the data presented in Chapter III. It provided the team's analysis of the CPEN SMU CPI program and selected features of the CLNC SMU internal operations contracts. Finally, this chapter concluded with a detailed look at the distribution methods currently being employed through different transportation means. The conclusions and recommendations are discussed in Chapter V.

V. PROJECT SUMMARY

This final chapter is split into three parts: conclusions and recommendations, focus of future research, and chapter summary. The first part covers the team's final conclusions drawn from the project and recommendations for implementation. These conclusions specify the scope of implementation, the requisite authority, and associated timelines. The second part provides ideas for future research and analysis. The last part of this chapter is the summary, which answers our primary research question.

A. CONCLUSIONS AND RECOMMENDATIONS

For this section, areas of focus include the CPEN SMU SOP, CPEN CPI Program, and employment of contracted distribution support in comparison to the utilization of TSB, contract management, and the systems approach of building capacity over time. Our conclusions are limited in scope in order to provide actionable recommendations to the appropriate stakeholders within the MCSS. The intents of these recommendations are to build upon best practices and to strengthen areas of concern.

1. The Camp Pendleton Supply Management Unit Standard Operating Procedure

Due to the direct positive effects of the CPEN SMU SOP, the CLNC SMU needs to immediately allocate time, resources, and personnel in the form of an operational planning team (OPT) for the creation of its own SOP. The OPT should be led by the SMU OIC and staffed with subject matter experts from each section of the SMU as well as the external agencies that directly enable the SMU to conduct supply support operations. This OPT should utilize the CPEN SMU as a baseline document to drive the planning process. These staffing members of the OPT need to have the experience, authority, and communication capabilities to provide input and continual feedback into the OPT process. The objectives of the OPT should include the codifying of the CLNC SMU's internal operations into one publishable SOP, the development of SOP performance metrics, a glidescope schedule for SOP refinement, and recommendations for implementing the creation and staffing of an SMU Process Reform section. Lastly,

this Process Reform Section should focus on applying Lean Six Sigma best practices and quality control activities with the CLNC SMU supply chain.

2. *The Camp Pendleton Continuous Process Improvement Program*

The CPI program at the CPEN SMU is mature and can be used as a model for other organizations. This program is driven by senior leadership involvement, customer satisfaction focus, knowledgeable practitioners, and a culture accepting of change implementation. The CLNC SMU OIC should immediately establish an OPT in order to develop a Process Reform section implementation plan. The OPT lead should coordinate with the CPEN SMU OIC Process Reform section OIC in order to share best practices, lessons learned, and amplifying guidance on how to implement the DOD CPI program at the CLNC SMU. The OPT should also explore the current CPI programs underway within II MEF as well as training opportunities available within the region to include federal and private organizations in order to build CPI capacity organic to the CLNC SMU. The status of implementation for both the CLNC Process Reform section and the CPI program should be a topic at the next SMU Operational Advisor Group (OAG), which occurs annually. The expected timelines for the standing up of the Process Reform Section and the CPI program within the CLNC SMU will be dictated by the level of involvement at the senior level and the practitioner knowledge gained through formal CPI training.

3. *Using Contracted Support or Transportation Support Battalion*

The employment of the SWRFT contract aboard MCB CPEN for transportation and distribution operations is not the normal operating procedure per MAGTF supply operations; however, the positive effects of this contracted supply support should not be discounted. The SWRFT contract facilitates consistent supply runs for the SMU and relatively short delivery timeframes to its support units. The CPEN MMDC Marines also have a close working relationship with SWRFT that enables them to provide timely and accurate shipment tracking data in the form of Marine pallet riders using RFID tags with the associated tracking software. The SWRFT contract also frees up the CPEN SMU and 1st TSB Marines and their transportation assets to conduct other mission requirements.

The employment of 2d TSB aboard MCB CLNC abides by current Marine Corps supply doctrine but does come with its drawbacks. With the absence of contracted personnel and assets like SWRFT, 2d TSB bears the brunt of the workload in supporting the CLNC SMU and its supply support operations while also supporting the rest of the base. This increased workload creates additional requirements for 2d TSB that distract from the CLNC SMU's ability to perform at the same level and expectations as the CPEN SMU. Negative effects are felt by warfighters aboard MCB CLNC due to increased delivery times and inconsistent supply runs, which stem from competing base and MEF requirements for transportation support tasked to 2d TSB. The positive effect of utilizing 2d TSB for distribution operations aboard MCB CLNC comes in the form of executing daily supply support operations in line with published Marine Corps supply doctrine.

Due to the fact that the CLNC SMU does not have a Process Reform Section executing CPI projects for its internal processes like the CPEN SMU, a direct comparison with recommendations to contract out the CLNC SMU's distributions operations is neither fair nor reasonable. Before the idea for a SWRFT-like contract can be recommended for MCB CLNC, additional research needs to be conducted by 2d MLG in order to evaluate the capacity of 2d TSB to meet its current tasked transportation requirements. Furthermore, incremental efficiencies need to be achieved within CLNC SMU internal operations in order to properly evaluate the distribution operations of 2d TSB for MCB CLNC.

4. Contract Management in Support of Supply Management Unit Operations

Although the employment of the SWRFT contract aboard MCB CPEN has shown to have positive effects of the CPEN SMU CPI program with its consistent and timely delivery schedules, key features of the contract are missing. Currently, the SWRFT contract does not include the employment of CORs, nor does it include direct incentives for SWRFT to provide support to the CPEN SMU. The absence of CORs and language within the contract tying SWRFT to supporting the SMU can lead to an environment in which the CPEN RCO would not be aware of perfunctory behavior by either SWRFT or the SMU that negatively impacts the supply chain. The CPEN RCO contracting officer

managing the SWRFT contract needs to implement revisions to the contract to incorporate CORs and incentives for the contractor that positively affect the supply chain. These revisions for this contract should be made before the execution of the third and final option year in 2017.

The two CLNC SMU contracts have administrative errors and contradicting language that have the potential to create a negative impact on internal operations and the warfighter. These errors are easily avoidable and fixable during an internal review prior to posting the solicitation. The CLNC contracting officer has the authority to modify existing contracts in order to eliminate these mistakes. The CLNC RCO should review its internal processes and implement internal control procedures to take corrective action immediately. Both contracts are also in need of CORs and revised evaluation criteria in order for the CLNC RCO contracting officer to better manage the execution of the contract against the expected performance standards. The CLNC RCO should work to revise the language in the areas of concern in a timely manner that is conducive to the current operational tempo and staffing capabilities of its office.

5. *Building Capacity over Time*

The CPEN SMU has built up capacity over time due to the development and refinement of its SMU SOP, inclusion of the CPI program, and contracted support for distribution operations. This trifecta is believed to have culminated in a positive net effect on the warfighter. The success of the CPI program and its positive effects to the CPEN supply chain stem from the actions of the CPEN SMU Process Reform Section. This section has the unique advantage of having a permanent OIC in the form of a federal employee who is a Lean Six Sigma black belt. Having a permanent OIC in the CPEN SMU Process Reform Section allows growth and maturity of the CPI program to take place despite the high turnover of Marine Corps personnel. The direct positive effects of the CPI program on the internal process of the CPEN SMU are passed on to the distribution operations of SWRFT, which in turn enables the CPEN SMU to maintain consistent, timely, and accurate delivery schedules. Due to these positive effects within

the CPEN supply chain, the CPI program and the Process Reform OIC should be maintained as a long-term billet.

Building upon the successes of the CPEN supply chain and its CPI program, 2d MLG should not view these recommendations as stovepipe projects to be performed by individual units. Any one element could be implemented, but taking a systems-oriented approach ensures synergies. An action officer should be appointed at the MLG level to lead the joint implementation of these projects within a system of systems approach. This action officer should have the requisite training and experience in executing a project of this scope. The objective of this action officer is to manage the execution of these projects to ensure a synergistic environment is fostered in order to maximize the positive effects in optimizing the CLNC supply chain.

B. FOCUS OF FUTURE RESEARCH

Based on the project team's findings, the following areas are suggestions for future research. A comparative analysis of the current transportation support structure at CLNC and CPEN SMUs through a cost benefit analysis method. Next, studying the SWRFT contract through each of the six contract management phases. Finally, an internal analysis of the Camp Butler SMU for relevant cross-pollination.

1. Contracted Support vs. Transportation Support Battalion comparison through a Cost Benefit Analysis

An area for further research would be a comparison of the SWRFT contract and utilization of 2d TSB for distribution operations. This comparison would have to consider the impact of all associated costs such as fuel, contracted labor/overtime, lost/reduced capability, and environmental impact. These could then be compared to the associated benefits such as time savings, impact to unit maintenance readiness, and reduced USMC asset wear and tear. Lastly, an analysis into the potential loss of distribution operations as a core competency for 1st TSB with the utilization of the SWRFT contract should be explored as well. The competency of distribution operations should be quantified and monetized in order to compare the decision to utilize contracted supported for Marine Corps distribution operations.

2. *Analysis of The South West Regional Fleet Transportation Contract by the Six Contracting Management Phases*

The Department of Transportation and the Marine Corps worked out an arrangement and contracted for transportation support and services. Researching and conducting a case study of the SWRFT contract against the six contract management phases would enable further understanding of interagency-type contracts. Furthermore, an analysis of the SWRFT contract Justification and Approval would allow for greater insight into how and why contracted transportation support was favored over organic Marine Corps transportation capabilities.

3. *Analysis of Outside the Continental United States Supply Management Unit for Relevant Cross-Pollination*

Our research was limited to the two CONUS SMUs at CLNC and CPEN. The third SMU is located Outside the Continental United States (OCONUS) on Camp Butler in Okinawa, Japan, within III MEF. This OCONUS location likely has different requirements and limitations due to a variety of reasons and constraints. Additional research could be conducted into how the SMU aboard MCB Camp Butler currently manages its supply chain in supporting the warfighter.

C. SUMMARY

The team's first four subsidiary questions were answered within the previous four chapters of this project. The last subsidiary question was addressed within this chapter. The team's primary question of this project was how do the current SMU internal operations affect the warfighter—positively or negatively? With the employment of a combination of the supply point and unit distribution methods within a pull style replenishment system, both the CPEN and CLNC SMUs leverage their current supply capabilities to positively affect the warfighter. The combination of these methods coupled with the implementation of an SOP, SPNs, a Process Reform Section currently managing and executing the USMC CPI program, and contracted logistical support enables both SMUs to accomplish their mission as intermediate supply activities through the ideals of

flexibility and efficiency. Both SMUs stand to gain efficiencies in their respective supply chains through the conclusions and recommendations outlined in this project.

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APPENDIX. DOD'S CONTINUOUS PROCESS IMPROVEMENT ASSESSMENT TOOL

This is the Continuous Process Improvement Assessment Tool that is utilized by the DOD.

CPI Maturity Assessment Tool

Organization: _____

Scope (Area) of Assessment: _____

Date of Assessment: _____

Name and Position of Person Filling out the Form: _____

Cumulative Average Score: _____

Cumulative average score of less than 3 = beginner stage of CPI organizational action

Cumulative average score of 3 to 4 = intermediate stage of CPI organizational action

Cumulative average score of 4 to 5 = advanced stage of CPI organizational action

1. Mission, Vision & Strategic Planning

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Has the organization clearly defined its initial Vision?					
Have the organization's Champion and Steering Committee successfully conveyed a sense of urgency to the rest of the organization?					
Are there clear signs of management commitment from the perspective of the people below them?					
Have the Champion and Steering Committee obtained organizational buy-in?					
Is there a clear commitment by the Champion and Steering Committee to develop people's skills and abilities in support of change?					
Have the Champion and Steering Committee created a sense of urgency for change?					
Is there strong evidence of a clear focus on providing value to the customer, including a definition of who the customer(s) is (are)?					
Is there a clear commitment to leverage the extended enterprise, the customer(s) and suppliers outside the organization itself?					

2. Conduct a Value Stream Analysis

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Have the Steering Committee and CPI Support Team mapped the enterprise value streams?					
Have the Steering Committee and CPI Support Team internalized the Vision in well defined future state?					
Have the champion and Steering Committee set clear goals and metrics?					
Have the champion and Steering Committee identified and involved key stakeholders?					
Have the Champion and Steering Committee, with the help of the stakeholders, identified the key leverage points that define where they should concentrate their efforts?					

3. Develop Structure/Behavior

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Have the Champion and Steering Committee identified and empowered Change Agents?					
Have the Champion and Steering Committee aligned incentives with the goals of the CPI implementation?					
Have the Champion and Steering Committee adapted the organization's structure and system to support CPI?					
Have the Champion and Steering Committee defined expected organizational behaviors and set expectations accordingly?					

4. Goal Alignment & Deployment

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Have the Champion and Steering Committee brought their commitment to everyone in the organization?					

5. Create & Refine Operational Plan

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Have the Champion and Steering Committee committed the necessary resources to carry out the plan?					
Have the Champion and Steering Committee ensured that the people have the necessary education and training to support CPI?					
Have the Champion and Steering Committee deployed the operational plan throughout the organization?					

6. Implement Operational Plan

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Have the various pieces of the organization tasked with improvement activities implemented CPI activities?					

7. Monitor

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Are the data relevant to those metrics being gathered and analyzed to determine the extent of improvement?					

8. Focus on Continuous Process Improvement

Question	1	2	3	4	5
	Not yet started	In-process	Demonstrated	High Visibility	Transformation Evident
Do the Champion, Steering Committee, and CPI Support Team actively nurture the process?					
Do the Champion, Steering Committee, and CPI Support Team regularly refine the Plan?					
Do the Steering Committee and CPI Support Team capture and adopt new knowledge, spreading it across the organization?					
Do the Steering Committee and CPI Support Team capture and standardize successful improvements?					
Do the Champion, Steering Committee, and CPI Support Team actively work to institutionalize PDCA thinking?					

Figure 15. CPI Maturity Assessment Tool. Source: DOD (2006).

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